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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

Contents

Volume 103—No. 6 **August 8, 1938**

READER COMMENTS 11

AS THE EDITOR VIEWS THE NEWS 15

NEWS
- Present Status of Great Lakes-Atlantic Seaway Project 17
- Detroit Workers Try "Outside Sitdown" strike 19
- Foundries Expect Better Business 20
- Financial News of the Steel Industry 20
- Steelworks Operations for the Week 21
- Men of Industry 28
- Obituaries 29
- July Pig Iron Output Up 10.7 Per Cent 30
- Steel for Peace, in Series of Five Bridges 31
- Meetings 32
- Activities of Steel Users and Makers 85

MIRRORS OF MOTORDOM 23

WINDOWS OF WASHINGTON 26

EDITORIAL—More Jobs Can Be Created, If— 33

THE BUSINESS TREND
- Activity Index Substantially Unchanged 34
- Charts and Statistics 35

TECHNICAL
- Finish and Wear 36
- Improved Annealing Covers for Tin Plate 39
- Sprockets Welded and Flame Hardened 45
- Production Welding of Lawn Mower Handles 49

PROGRESS IN STEELMAKING
- Burden Material—Part I 40

HEAT TREATING
- Modulating Control 42

MATERIALS HANDLING
- Continuous Strip Mill—Part I 47

JOINING AND WELDING
- Jig Assembly 52

FORGING
- Pressure Machining 54

NEW METAL PRODUCTS 57

INDUSTRIAL EQUIPMENT 58

MARKET REPORTS AND PRICES 67
- The Market Week 68

BEHIND THE SCENES 76

CONSTRUCTION AND ENTERPRISE 88

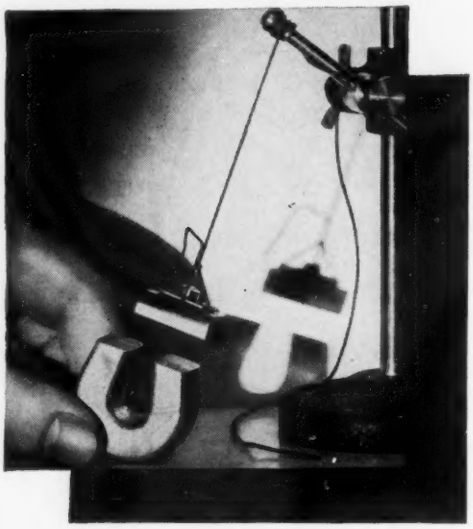
INDEX TO ADVERTISERS 94

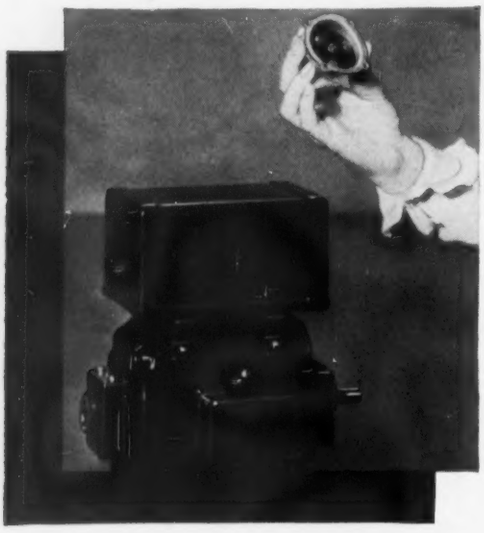
HIGH NICKEL ALLOYS

RAISE EFFICIENCY AND LOWER COSTS

...in scores of special applications

HIGH MAGNETIC QUALITIES... The magnet pictured here is small, but extraordinarily powerful—capable of lifting 60 times its own weight. This particular type, made of a new alloy rich in Nickel, is used for damping magnets in the polyphase meters of the Duncan Electric Co., Lafayette, Ind. Not only do these alloys of high Nickel content effect substantial savings in weight (in this case 80%) but they also have a higher permanency factor than other commercially available magnetic materials and are practically immune to the effects of magnetic disturbances caused by short circuits and lightning. Manufacturers who employ magnetic materials in their products will find these new alloys of Nickel profitable to investigate.

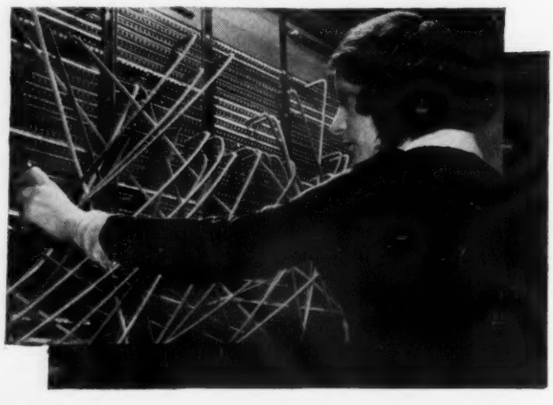




HIGH AND LOW EXPANSION PROPERTIES...

One of the most valuable metallurgical developments in recent years has been the production of thermostatic metals for operating automatic control devices. Pictured here is one employing a bi-metallic disc made of two alloys of Nickel, one having a high degree of expansion and the other low expansion properties. It guards the Westinghouse refrigerator motor, disconnecting it when it gets too hot and reconnecting it when it cools off. Principle upon which these thermostatic metals operate is based on a differential in the expansion properties of the two constituent metals. Changes in temperature cause them to deflect and this in turn acts on the control device. Alloys of Nickel can be produced for applications requiring extremely low expansions as well as for service where specific expansion characteristics may or may not be low.

IMPROVED PERMEABILITY... When you make your long distance telephone call or send a cable, a highly magnetic Nickel-Iron alloy of improved permeability containing up to 80% Nickel helps to deliver your message. Impulses sent over long circuits have a tendency to drag their "tails" behind them, upon which succeeding impulses tread. But through the use of loading coils made of a high Nickel alloy, and spaced at regular intervals along the circuit, transmission is speeded up and your words made intelligible. The high magnetic permeability of these alloys is also depended upon to increase the efficiency of submarine cables and various parts of radio, telephonic and telegraphic installations. We invite consultation on the use of the Nickel alloys in your equipment.



THE INTERNATIONAL NICKEL COMPANY, INC., NEW YORK, N. Y.

As the Editor Views the News

■ HEALTHY upswing continues to characterize the demand for iron and steel. Last week's output was at a rate of 40 per cent of ingot capacity, a rise of 3 points over the preceding week and the fourth consecutive rise (p. 21) since July 11. A further gain is expected. For the first time since March (p. 30) pig iron production is up, July daily average output having been 39,122 gross tons, an increase of 3764 tons or 10.7 per cent over the June daily average. Subassembly lines in automobile plants again are moving in spirited fashion (p. 23) and the first 1939 cars are expected to pass inspectors this week. Of special significance is a revival in retail demand for cars, with deliveries of most makers now running above the June rate.

• • •

Notable Meeting

Plans for an international meeting of steelmakers, engineers and metallurgists, long in the making, have crystallized. The British Iron and Steel institute and the British Institute of Metals, at the joint invitation of the American Iron and Steel institute and the American Institute of Mining and Metallurgical Engineers, are scheduled to meet with the latter two bodies (p. 32) in New York Oct. 3-4. . . . Seventh international management congress, to be held in Washington in September, will focus attention (p. 32) on our system of free enterprise and how it has elevated living standards. . . . Unusually high water in the Great Lakes this year is permitting larger ore cargoes. One vessel (p. 85) arrived at Indiana Harbor recently with a load of 15,726 tons.

• • •

Sitdown Outside

Torrid summer weather has brought a refinement in sitdown strike technique. At Detroit (p. 19) strikers sit on camp stools in the shade outside the plant and the management talks of providing daybeds for them. . . . Now in use in the production of automobile parts are small quantities of cold finished bars produced by a new method. Hot rolled bars (p. 24) are sandblasted to give them a surface that will hold lubricant and then pushed through extrusion dies into a variety of shapes. . . . Secretary Hull's new draft of a treaty with Canada (p. 17) revives the Great Lakes-St. Lawrence seaway project and with it the arguments for and against the project. . . . The foundry industry (p. 20) is cheered by prospects that September will bring increased demand for castings.

• • •

Smoother Surfaces

Because wear has been found to be directly related to surface finish of wearing parts (p. 36) profilometers are coming into wider use as aids in developing smooth surfaces . . . Gas-fired annealing covers incorporate noteworthy improvements which result (p. 39) in greater tonnage capacity per cover . . . By means of laboratory setups which duplicate blast furnace operating conditions (p. 40) the practice in reducing Eastern magnetite ores has been improved materially . . . Modulating temperature controllers maintain temperatures within two degrees in rotary-retort, gas-fired heat treating furnaces at a lock washer plant; direct and accurate control is obtained (p. 42) by placing thermocouples inside the retorts. Uniformity of product has been improved.

• • •

Resisting Abrasion

Flame hardening (p. 45) has been adopted as the method for increasing abrasion resistance of teeth of sprocket wheels for a new model tractor . . . Improvements in rustproofing (p. 49) are said to bring increased efficiency and lower costs . . . A new method of jig assembly (p. 52) makes it possible to fasten sheet metal parts together with greater speed and accuracy . . . One company has redesigned many parts for production by the cold forging method, with an accompanying reduction (p. 54) in manufacturing costs . . . Wood is being displaced as the traditional material for lawn mower handles; steel tubes (p. 49) are used instead, with jointless construction by means of welding . . . Steel is being used increasingly (p. 57) as the material for slats in venetian blinds.

E. L. Shaner

Inland Research Scores Again

Ledloy—Another Metallurgical Achievement that Is Saving Money for Steel Users

Again, the pioneering of Inland metallurgical research has, in effect, put money into steel users' pockets.

The recently announced development of INLAND LEDLOY has enabled metal working plants to speed up their machining operations 30% to 60%. In terms of dollars, savings like the following examples are typical:

In the making of a case carburized worm shaft, $47.85 machining cost is being saved per ton of steel used.

The manufacturer of a socket ball control joint is saving $37.91 per ton by using Inland Ledloy 1120 instead of ordinary SAE 1120.

Finding ways of making better steel for each customer's purpose is the basis for Inland personal service. The occasional development of a new kind of steel, such as Inland Ledloy or Inland Hi-Steel (high tensile), merely emphasizes the extensive modern laboratory facilities which Inland makes daily available to all steel users.

Often but a small change in the surface characteristics of a steel sheet, or special control over its physical properties, makes a big difference in the costs and results of a forming operation; or the suggestions of an Inland engineer may help to save time and material in the use of structural steel.

More companies today than ever before are utilizing these special services to supplement their own technical staffs. We believe you would find this a worth-while practice to follow.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Great Lakes-St. Lawrence Seaway Issue Revived; How It May Affect Steel

WASHINGTON

■ HOW much the steel industry of the Middle West would benefit if the United States and Canada reached an agreement regarding the Great Lakes-St. Lawrence seaway is a matter of conjecture. Some experts, after studying the situation, believe the industry would gain substantially, while others are not so sure of it.

This project has been under consideration for a century, but since the days when Herbert Hoover was secretary of commerce, and on down through the present administration, it has been receiving serious attention.

The most recent step was taken June 1, when Secretary of State Hull sent a note to Canada transmitting the draft of a treaty which provides for the planned use of the Great Lakes-St. Lawrence basin.

There is much difference of opinion about this. Some Washington observers say the proposal as drafted by Mr. Hull would be approved by the senate, while others are certain that it would not. The secretary evidently feels that the United States would agree to it, otherwise he would not have taken the step that he did.

According to the state department, the use of these bodies of water would make possible not only development of navigation but also cheap power.

"Enormous Possibilities"

It has long been recognized, according to department officials, that both the Niagara Falls and the international rapids sections have enormous possibilities. When the secretary sent the proposed treaty to Canada the department announced that "deep water navigation will meet cheap power," and then called attention to the fact that "this will make possible the bringing together of Great Lakes iron ore, Canadian and American mineral resources, and water-borne materials. Included in this is the possible development of the extremely rich and relatively undeveloped iron ore resources in New York state itself."

Some of the shrewdest students of the problem are of the opinion that there is now more opposition to the proposed deep seaway than ever before. And this, despite the fact President Roosevelt has been much interested and insistent on doing something about a treaty with Canada. This was one of the earliest defeats the President was dealt by the senate, after he went as far as he could at the time to force the treaty through that body.

■ The accompanying article explains the status of the Great Lakes-St. Lawrence seaway project, as Washington views it. Despite the fact the senate refused to ratify President Roosevelt's proposed agreement with Canada, Secretary Hull on June 1 last transmitted a new draft of a treaty to the dominion government. In a subsequent article, STEEL will present some of the arguments for and against the seaway, with particular reference to how it may affect the iron and steel industry.

The hearings which were held by the foreign relations committee in November and December, 1932 developed strong opposition.

It will be recalled that the treaty at that time had been signed by both the Canadian and American governments and awaited only the action of the senate to ratify it. However, the senate "killed" the ratification.

The Lake Carriers' association, the New York barge canal shipping interests and the upper St. Lawrence carriers, all opposed the seaway. They were supported by the railroads and their employes in the Middle East, and many others.

However, no producer, consumer or association of industrial interests of either the West, Middle West or the East appeared to oppose the project. It was defended by many leading manufacturers.

It is understood that state depart-

■ Iron ore vessel locking through the Welland canal. The canal, completed in 1931, is one of the important connecting links in the proposed Great Lakes-St. Lawrence seaway

ment officials believe the fact the Great Lakes and part of the St. Lawrence river form the boundary between the United States and Canada should be no obstacle to a full use of the waterway for navigation and power. They contend that great public advantage for both countries can be obtained by effective co-operation.

The specific proposals of the treaty sent to Canada by Secretary Hull are so framed that there need be no delay in developing the international rapids of the St. Lawrence river. Provision is made assuring completion of the waterway within a reasonable time. It is stated that our government is prepared to finance the work necessary to carry sea-borne commerce past the international rapids, and to make possible power development from these rapids whenever desired by either country.

The latest information here is that the proposed treaty has not been taken up by the Canadian legislature. This probably is due, in part, to the fact the Canadians do not see why they should again agree to a treaty unless they receive some assurance our senate would ratify it. Of course, there is no one in the United States, not even the President himself, who could give such assurance, and it remains to be seen just how far this matter can go under such restriction.

The proposed treaty suggests the creation of the Great Lakes-St. Lawrence Basin commission. This commission would prepare plans, allocate construction between the two governments, approve contracts and assure execution of the work. It also would act in an advisory capacity for both governments.

Nine-Tenths Completed

The proposed seaway would extend for a distance of 2687 miles. Of this mileage about 90.4 per cent is already complete, requiring no further improvements. Included in the 9.6 per cent not yet completed is the St. Mary's river, 63 miles; St. Clair river, 40 miles; Lake St. Clair, 31 miles; Welland canal, 28 miles, complete but needing dredging to provide seaway depth; international rapids section, St. Lawrence river, 48 miles; and Soulanges section, St. Lawrence river, 13 miles. Total mileage incomplete is 258.

During the Coolidge administration a United States St. Lawrence commission was created to study the possibilities of a seaway from the Great Lakes to the Atlantic, and this was followed during the present administration by an inter-departmental board, appointed in 1933 by President Roosevelt, including officers of the United States Army corps of engineers, department of commerce power authority of the state of New York, and the federal power commission.

It has been estimated by United States government officials that the annual cost of the project to the United States would be less than $9,000,000. Army engineers have estimated the annual savings would be some $70,000,000, on 13,000,000 tons of selected commodities in foreign trade. Intercoastal traffic, it is said, would result in additional savings.

Both the United States and Canada have spent large sums in preparation for such a project. It is estimated Canada has spent $270,000,000 on various parts of the job, and the United States has spent a slightly larger sum. This work has not been lost and is of value whether the seaway is ever completed.

The improvements referred to deal with waterways in the various sections, such as the Welland ship canal which Canada built at a cost of $131,000,000 and which is in constant use.

"For Power and Navigation"

When this inter-departmental committee reported to President Roosevelt it stated:

"The studies independently made by the various agencies lead to the conclusion that the Great Lakes-St. Lawrence project for power and navigation should be undertaken without delay.

"The navigation project is comparable in economic value and importance to the Panama canal. It is combined with the development of the largest and cheapest block of hydroelectric power available in North America.

"Undertaking of the project will provide employment on essential and self-liquidating public works during the immediate period of construction. Its completion will unquestionably confer important national benefits and stimulate the future growth and development of the United States."

Comparatively little iron ore or steel was imported to the Great Lakes last year or so far this year. The trend was in the other direction, due to Europe's demand for steel and scrap. Recently there have been some imports of tool steel, and substantial shipments of non-metal goods.

Bearing on this question are figures made available at the department of commerce showing exports for the Great Lakes customs district, which includes Buffalo, Michigan, Chicago, and Ohio. In June last year 46,144 gross tons of iron and steel (other than iron ore) valued at $2,410,472 were exported, compared with only 18,588 tons valued at $1,154,395 exported in June this year, the latest figures available. In June last year 61,381 tons of iron ore valued at $205,108 was exported compared with 205 tons valued at $1393 in June this year.

Iron and steel imports into this same customs district in June last year totaled 3921, excluding iron ore and scrap. Iron ore imported in the same month totaled 14,578 tons, while scrap amounted to 5024 tons. In June this year the imports, excluding ore and scrap, had dropped to 707 tons. The ore imports totaled 7760 tons and scrap 119 tons.

Enamelers' Program For Third Annual Forum

■ Porcelain Enamel institute has practically completed the program for its third annual forum at the University of Illinois, Urbana, Ill., Oct. 12-14, according to F. E. Hodek Jr., General Porcelain Enameling & Mfg. Co., Chicago, who is president of the institute and chairman of the forum committee.

The institute will have as its guests a group of members of the Institute of Vitreous Enamelers of England, three of whom will participate in the formal program. Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O., will be guest speaker at the banquet on Oct. 13.

Among subjects to be discussed at technical sessions are: Tentative tests for abrasion resistance, sag resistance properties of enameling iron, testing enamel stock, one cover coat ware, ball milling practice, enamel shop waste, black specking of hollow ware, automatic blasting, color matching, circulating ground coat systems, burning tools, automatic spraying and brushing equipment, automatic welding, and relationship of welding practices with enamel defects.

"American Doctor" To Head Health Research

■ Appointment of Dr. Victor G. Heiser, former director of health of the Philippine islands and author of "An American Doctor's Odyssey," as research director of the National Association of Manufacturers' committee on healthful working conditions, was announced last week.

"This committee was organized recently with a view to assisting American industry in the field of industrial health," said S. M. Chester, chairman of the association's executive committee. "It was created with the hope of bringing about a wider extension of medical service for American workers."

Frank Purnell, president, Youngstown Sheet & Tube Co. is chairman of the committee.

A Sitdown in the Shade, Daybeds, and Dusky Giant in Labor "Burlesques"

DETROIT

■ NAME CALLING by the two warring factions of the United Automobile Workers reached a new high last week as the group which President Homer Martin had previously charged with being instigators of communistic plottings against the union submitted countercharges purporting to show an alliance between Mr. Martin and Jay Lovestone, predecessor of Earl Browder as secretary of the communist party in the United States.

The so-called trial of five suspended officers of the UAW by President Martin in many respects has been a burlesque, marked by frequent brawls, mock secrecy and innumerable "press conferences." In fact some newspaper reporters covering the "trial" became so weary that they amused themselves by watching one of Martin's 320-pound 6-foot 6-inch negro guards pick up photographers by the heels and dangle them in mid-air.

Meanwhile, a new type of sitdown strike developed at the National Production Co. here where 61 employes set up camp stools outside the plant in the shade and embarked on what was claimed to be the first outdoor sitdown strike on record. Strikers are members of the Mechanics Educational Society of America, a labor organization which has been out of the limelight since the UAW took over affairs here last year. President Paul Barker, president of the company, said he was contemplating buying some daybeds for the men so they would be more comfortable.

A week-old strike engineered by the MESA at Michigan Tool Co. because of alleged discrimination against union workmen in favor of nonunion foremen was still unsettled late last week.

One plant of the McCord Radiator Co. here was closed Wednesday after UAW workmen struck in protest of what they claimed was a company plan to transfer operations to an Ohio city. Company officials denied the implication and said unemployment shrinkage had been the result of loss of much business.

DENY WAGE REDUCTION

Reports that the Empire Sheet & Tin Plate Co., Mansfield, O., had reduced wages 25 per cent, and that the reduction had been accepted by the Amalgamated Association of Iron, Steel and Tin Workers, were denied last week.

Joseph Scanlon, head of the local Amalgamated lodge, said: "The whole story is ridiculous."

J. M. Hill, company president, and R. R. Jenkins, assistant, were out of the city, but a financial news service which carried the original report subsequently quoted Mr. Jenkins as saying: "There has been absolutely no change in our base wage rate."

CAN COMPANY STRIKE CLOSES WESTERN TIN MILL

Columbia Steel Co.'s tin mill at Pittsburg, Calif., was forced to close the week of July 25 because of the continuation of the SWOC strike against the American Can Co.

Columbia Steel officials stated that the can company is the largest customer of the Columbia tin mill and without this outlet the company warehouses filled up with tin plate.

Immediately affected by the closing were 450 tin mill employes. Open-hearth furnace and rolling mill operations were not affected to any great extent, because of recent increases in production of other steel commodities.

JOB VALUATION—"EITHER BY INDUSTRY OR GOVERNMENT"

American industry will eventually have to keep step with Europe and set up a system for evaluating men and jobs, D. W. Weed, head of the wage payment section of General Electric Co.'s manufacturing general department, told the Hartford chapter of the National Association of Cost Accountants meeting in Farmington, Conn., recently.

"Will industry undertake this work for itself or will the government have to do the job for industry?" asked Mr. Weed. He described the system used by General Electric, stressing the fact the hardest as well as the most important step in setting up a system of job evaluation is the derivation of a key list of jobs.

"This work," he said, "should be done by a committee so that all parts of the organization will be in agreement with the supervisory staff. It is essential the fundamentals of the system hold for the entire factory force so the possibility of discrimination will be eliminated at the start."

$100,000 EMPLOYES' CAFETERIA

Westinghouse Electric & Mfg. Co. climaxed the serving of 10,000,000 meals over a 45-year period with the opening of a new $100,000 employes' cafeteria at the East Pittsburgh Works.

On throwing open the doors on the first day, 1200 men and women enjoyed lunch in the air-conditioned cafeteria, "as streamlined and luxurious as the lounge of an ocean liner." Thirty chefs and waitresses served them in two shifts and the 30,000 watts of indirect light, more than enough to illuminate 100 ordinary living rooms, cast a shadowless glow over 100 modernistic micarta tables trimmed with stainless steel.

Spiral Casing for Boulder Dam

■ **Interior view of cast steel casing for a 115,000-horsepower hydraulic turbine for Boulder dam, being built in Allis-Chalmers Mfg. Co. shops, Milwaukee. Company has completed six of the turbines, and has two more under construction. The spiral casings, which will supply 150,000 cubic feet of water a minute, are cast in six sections, the largest weighing 50 tons. Completed casing alone weighs 210 tons; the complete turbine, 600 tons**

Foundries Expect Better Business

■ IMPROVED business by September is anticipated by 70 per cent of United States foundries covered in a survey by *The Foundry,* Cleveland. Sixteen per cent of those which reported expect business to be "much better," 53.5 per cent expect it will be "a little better." Seventeen per cent reported September prospects are uncertain while 13.5 per cent predicted no change.

August prospects were less bright; 44 per cent predicted no change from the July rate; 36 per cent expect a little better business; 11.5 per cent believe business will be much better; and 8.5 per cent believe it will be worse than in July.

Composite operating rate for all districts late in July was 45.76 per cent of capacity working an average of 3.84 days a week. Eastern foundries reported operations averaging 43.64 per cent, 3.51 days a week; in the Middle West, average rate reported was 43.77 per cent, and 3.75 days a week. Incomplete returns from the South indicated average operations of 52.86 per cent, and 4.03 days a week; from the Far West, 41.63 per cent, and 4.27 days a week.

Twenty per cent of all foundries reporting said inventories of raw material and supplies are low; 36.5 per cent reported fair inventories and 43.5 per cent said supplies were ample.

Production facilities are being studied, and possible new equipment purchases investigated "to some extent" or "considerably" by 67 per cent of the foundries which reported.

EMPLOYMENT INCREASING IN CLEVELAND DISTRICT

Sharp reversal of the employment trend is revealed by a Cleveland chamber of commerce survey. Of 100 companies, representing steel, metalworking, machine tool and other industries, 20 reported they would call back furloughed employes during August, 48 will operate with present forces—several will lengthen work week—and only two will decrease working staff.

5500 TO BE ADDED TO BIRMINGHAM PAYROLLS

Not less than 5500 employes will be added to the Birmingham district's industrial payroll, as a result of accelerated business during July and August, a survey last week indicated.

These include 800 coal miners at Woodward Iron Co.'s Dolomite mine and miscellaneous employment in that industry; also several hundred additional re-employed in blast furnace operations.

This month between 2000 and 3000 iron ore miners will be called back by Tennessee Coal, Iron & Railroad Co., and 700 will return to the Pullman Standard Car Co.'s Bessemer plant, where production is to begin during the last two weeks of the month on a $5,000,000 order for Southern railroad.

FINANCIAL

■ YOUNGSTOWN Sheet & Tube Co., Youngstown, O., reports second quarter net profit as $118,033, compared with a net loss of $139,529 in the first quarter. The indicated deficit for the first half is $21,496, against a net profit of $6,908,132 reported for the corresponding period last year.

* * *

Allegheny Steel Co., Brackenridge, Pa., had a net loss of $561,932 for the second quarter, compared with a loss of $194,394 in the first quarter and a net profit of $864,449 in the June quarter last year. First half deficit totaled $756,326 compared with a net profit of $1,415,503 in the same period last year.

* * *

Ludlum Steel Co., Watervliet, N. Y., reports a net loss of $157,229 for the second quarter, compared with a net profit of $506,087 in the same period last year and a loss of $68,383 in the first quarter this year. Deficit for the first half was $225,612, against net profit of $899,203, or $1.81 a common share, in the first half, 1937.

* * *

Eastern Rolling Mill Co., Baltimore, Md., had a net loss for the 12 months ended June 30 of $216,177, compared with a net profit of $221,517 in the preceding 12 months. A net loss of $106,383 was reported for the June quarter this year and the deficit for the first six months was $192,609. For the comparable periods a year ago, net profits of $82,476 and $145,235 were reported.

* * *

Crucible Steel Co. of America, Pittsburgh, has filed with the securities and exchange commission an issue of $10,000,000 of 4½ per cent bonds, due in ten years.

INVESTORS' HOLDINGS IN U. S. STEEL INCREASE

Common stock of the United States Steel Corp. outstanding June 30 amounted to 8,703,252 shares; preferred stock amounted to 3,602,811 shares.

Of the common stock, 1,961,495 shares, or 22.54 per cent, were in brokers' names, representing a decrease of 100,966 shares from the 2,062,461 shares, or 23.70 per cent, held by brokers March 31. Investors' common stockholdings June 30 were 6,741,757 shares, or 77.46 per cent, compared with 6,640,791 shares, or 76.30 per cent, March 31.

Of the preferred stock outstanding 375,269 shares, or 10.42 per cent, were in brokers' names June 30, a decrease of 9537 shares from the 384,806 shares, or 10.68 per cent, so held March 31. Investors' holdings of preferred amounted to 3,227,542 shares, or 89.58 per cent, compared with 3,218,005 shares, or 89.32 per cent, March 31.

Foreign holdings of common stock on June 30 were 842,862 shares, or 9.68 per cent, compared with 849,816 shares, or 9.76 per cent, March 31. Of the preferred stock, 80,145 shares, or 2.22 per cent, were owned abroad, against 79,380 shares, or 2.20 per cent, March 31.

Net Earnings for 47 Consumers Down 79.9 Per Cent

■ AGGREGATE earnings of 47 companies among equipment manufacturers, suppliers and other leading iron and steel consumers declined 79.9 per cent in the first half of 1938, compared with the period in 1937. STEEL's tabulations, Aug. 1, page 18, included 28 companies, while the subjoined table lists 19. All figures are net earnings except where asterisk denotes loss.

	Second Quarter 1938	Second Quarter 1937	First Half 1938	First Half 1937
Black & Decker Mfg. Co., Detroit	$ 63,887	$ 321,365	$ 147,378	$ 564,952
International Business Mach. Corp., New York	1,939,133	1,981,592	4,019,303	3,940,059
Babcock & Wilcox Co., New York	1,209,696*	394,542	1,758,349*	494,519
M. A. Hanna Co., Cleveland	163,038	896,419	220,600	1,390,433
Yellow Truck & Coach Mfg. Co., Pontiac, Mich.	203,670	1,119,896	321,245	1,576,640
Sullivan Machinery Co., Chicago	153,560*	115,673	310,600*	189,896
Pittsburgh Screw & Bolt Co., Pittsburgh	129,759*	472,814	227,014*	990,337
Electric Auto Lite Co., Toledo	151,415*	1,088,240	183,657*	2,316,375
Eureka Vacuum Cleaner Co., Detroit	80,806*	44,384	149,019*	103,704
Pittsburgh Coal Co., Pittsburgh	1,214,884*	370,046*	1,984,058*	571,773
Mack Trucks Inc., New York	217,459*	645,961	471,808*	940,260
American Radiator & Standard Sanitary Corp., New York	151,103*	2,180,785	800,700*	3,729,409
American Steel Foundries, Chicago	487,771*	1,354,401	866,195*	2,412,153
General Steel Castings Corp., Eddystone, Pa.	412,016*	124,397	618,670*	88,249
Murray Corp. of America, Cleveland	209,421*	313,821	290,358*	671,140
Addressograph-Multigraph Corp., Cleveland	304,150	688,088	613,963	1,192,586
Chapman Valve Mfg. Co., Indian Orchard, Mass.	183,856	236,745	415,825	451,612
New York Shipbuilding Corp., New York	30,827*	9,690	121,677*	12,188
Square D Co., Detroit	50,687	322,077	116,328	536,150

PRODUCTION

■ GAINS at most producing centers caused the steelworks operating rate to advance 3 points to 40 per cent last week. This is the highest rate since the first week in November, 1937.

Youngstown—Advanced 2 points to 40 per cent. Further increase of two or three points is expected this week.

Pittsburgh—Continuing increases in many production schedules moved the rate up to 33 per cent, 4 points over last week.

Wheeling—Resumption of work at an idle plant pushed the rate up 8 points to 54 per cent.

Central eastern seaboard—Gained 1 point to 29 per cent.

Cleveland—Up 15 points to 38 per cent, due to resumption of activity at National Tube Co.'s Lorain works after a week's shutdown, and additional open hearth placed in service at the Corrigan-McKinney plant of Republic Steel Corp. Further gains are indicated for this week.

Birmingham, Ala.—Down 3 points to 50 per cent with removal by Republic Steel Corp. of a Gadsden 90-ton open hearth. Eleven open hearths remain active.

Chicago—Up ½-point to 38 per cent, highest since first week of November. Leading interests curtailed output slightly, but gains by smaller mills caused fractional increase in rate.

New England—Down 3 points to 35 per cent. One small furnace, down for repairs, will be lighted this week advancing operations to around 40 per cent.

Detroit—Unchanged at 38 per cent, eight furnaces melting. This week the rate will be boosted to 52 per cent as three furnaces go into operation at the Ford steel plant.

Cincinnati—Gained 8 points last week to 58 per cent.

Buffalo—Rose 2 points to 39.5 per cent last week, with 17 open hearths melting.

St. Louis—Advanced 5½ points last week to 30 per cent.

Reader Comments

(Continued from Page 11)

a balanced relationship—reduce wages or increase prices. The question is which would be the wiser.

Arguments, of course, are being presented for each. Allow me to point to the following in favor of an increase in prices:

Reduced prices have not caused noticeably increased buying.

Consumers are slow to buy in a falling market, eager to buy in a rising market.

Reduction in wage rates would tend to reverse the upward trend of business indexes.

Chicago ECONOMIST

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Aug. 6	Change	Same week 1937	Same week 1936
Pittsburgh ..	33	+ 4	83	71
Chicago	38	+ 0.5	86	71.5
Eastern Pa...	29	+ 1	71	50.5
Youngstown..	40	+ 2	80	77
Wheeling	54	+ 8	93	92
Cleveland ...	38	+15	85	82
Buffalo	39½	None	86	81
Birmingham..	50	— 3	96	61.5
New England.	35	— 3	65	68
Cincinnati ...	58	+ 8	89	72
St. Louis.....	30	+ 5.5	77	†
Detroit	38	None	90	100
Average....	40	+ 3	84.5	71.5

†Not reported.

meet bitter opposition by labor and labor's allies, the politicians in power. Possibly this opposition would be expressed in new labor disturbances, costly to industry and labor alike. Possibly it would prompt new harassment of business by government.

A general wage cut by the steel industry probably would be followed by similar action in other industries. Wide-spread wage reductions would have the immediate effect of tightening purse strings and curtailing buying power. It would necessitate many readjustments which would confuse the immediate situation and

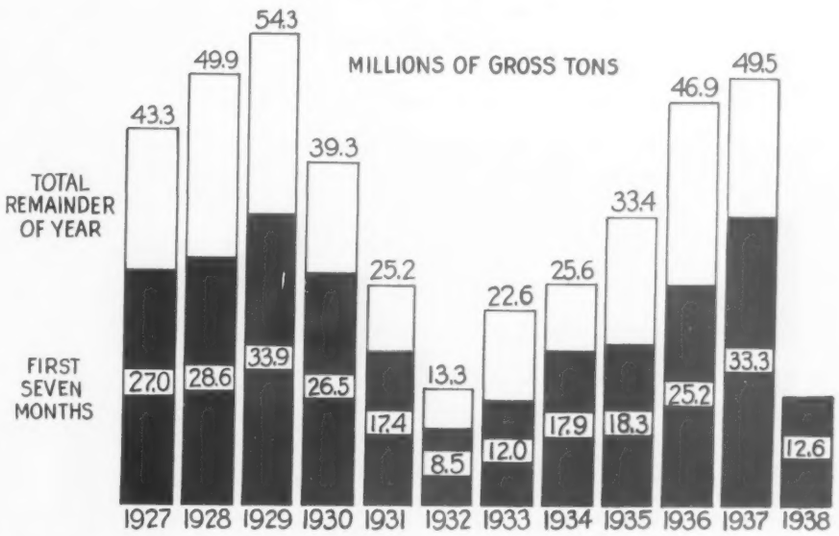
Ford Heads Automotive Congress Advisory Group

■ Henry Ford has accepted honorary chairmanship of Society of Automotive Engineers advisory board of world automotive leaders which is arranging for a world automotive Engineering congress, May 22-June 8, 1939, in New York, Indianapolis, Detroit and San Francisco. Purpose of the congress is to bring American and overseas automotive experts together to discuss developments in their field.

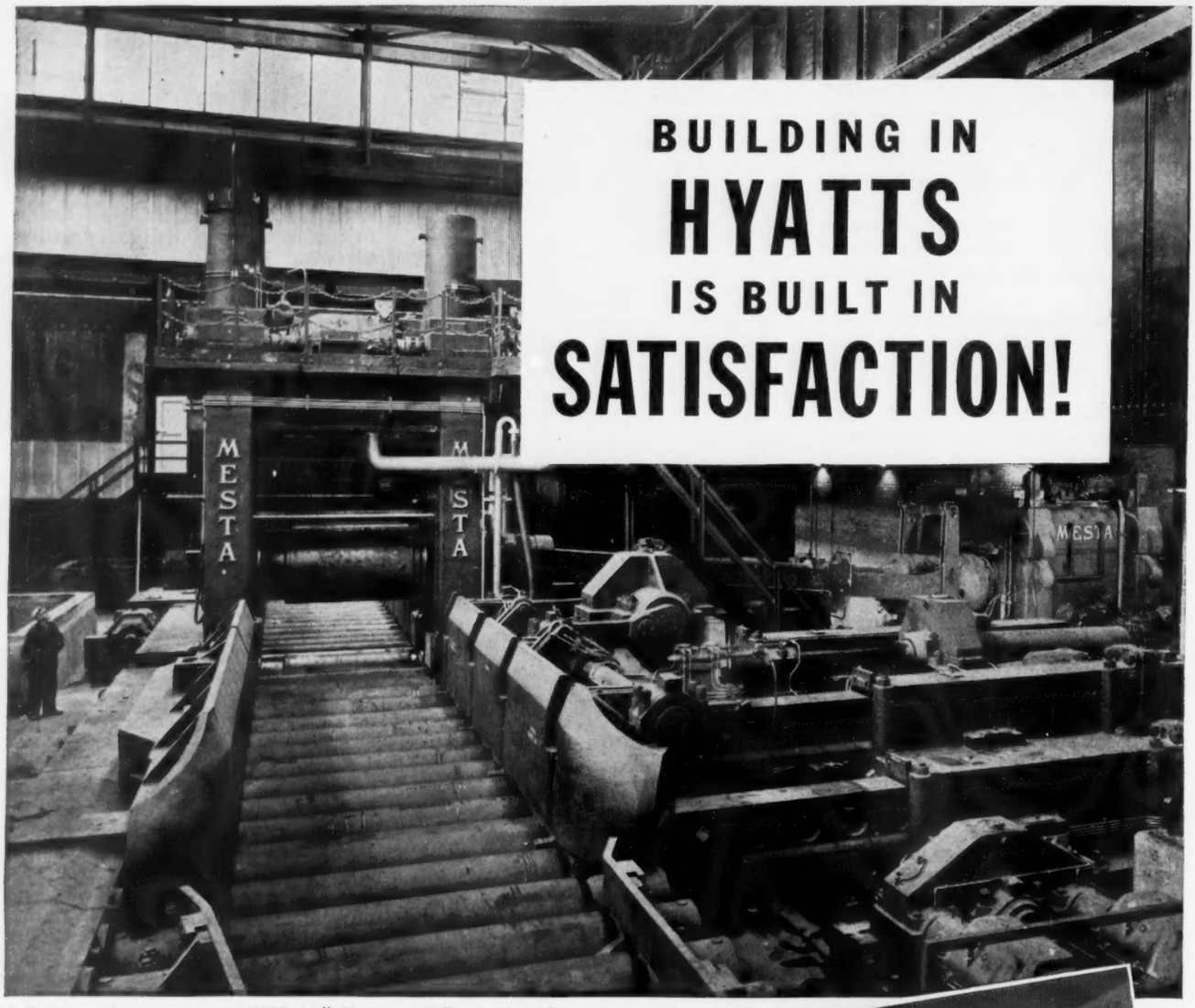
The congress will open with a five-day technical session and dinner in New York, May 22, and will include visits to the New York World's fair. The congress then will adjourn to Indianapolis to attend the annual 500-mile race and to be entertained by the Indiana section of the society at a dinner. Delegates will proceed from there to Detroit where they will visit automotive factories and be tendered a dinner by the Detroit section. A 3-day technical season will start in San Francisco June 6.

Plans for the congress are being made by committees headed by S.A.E. President C. W. Spicer, vice president, Spicer Mfg. Co., Toledo, O.; and Past President Ralph R. Teetor, vice president, Perfect Circle Co., Hagerstown, Ind.

How Much Steel This Year?

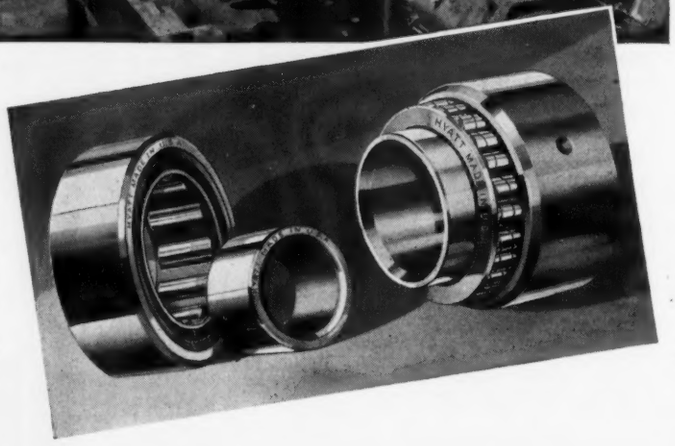


■ **More than half of a year's total tonnage of steel ingots is made in the first seven months of the year. This has been the experience in the past 11 years. Whether it holds true this year, remains to be seen. The proportion of 1927's total ingot output in the first seven months was 62.3 per cent; 1928, 57.2 per cent; 1929, 62.4; 1930, 67.4; 1931, 69.0; 1932, 63.9; 1933, 53.1; 1934, 69.9; 1935, 54.7; 1936, 53.7; 1937, 67.2 per cent. The average is 61.9 per cent of the total, made in the first seven months**



BUILDING IN HYATTS IS BUILT IN SATISFACTION!

● This new Hyatt equipped **MESTA 46" Blooming Mill** was recently put into operation at the Great Lakes Steel plant. Again indicating the predominance of Hyatts for tough operations.



CORRECT design, precision manufacture, and sound application of Hyatt Roller Bearings play a big part in that excellence of machine construction and performance which buyers accept with utmost confidence. No wonder more and more equipment builders are turning to Hyatt Roller Bearings. With Hyatts they know that strength, endurance, smooth operation, freedom from friction and wear are in-built . . . advantages that lengthen the life of every vital bearing position under their protection. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., and San Francisco. Hyatt Roller Bearing Sales Company, Chicago and Pittsburgh.

HYATT ROLLER BEARINGS

MIRRORS OF MOTORDOM

DETROIT

■ IN BLISTERING summer heat subassembly lines in automobile plants began to move last week in more spirited fashion and the first 1939 "pilot" cars probably will pass inspectors early this week. A week or two usually is required to build up stocks for feeding to final assembly, and by the latter part of this month a good start should be made on what the industry says are "the most interesting" models to appear in many years.

Two shifts were reported working on the Plymouth motor line last week, building engines at a rate of 2000 per day. The finished power plants were being moved to storage for the present, but a start also has been made on body production, indicating that schedules have been moved ahead appreciably. The same is true of Dodge and to some extent De Soto, although the Chrysler East Jefferson plant is still idle and not officially scheduled to resume until Sept. 1. However, this may be changed, as all inventory is completed and the plant is in readiness to start.

Plymouth is scheduled to complete 6000 cars this month.

Invitations were issued last week for a press preview of all four Chrysler divisions' 1939 models Aug. 15, indicating the corporation is redoubling its efforts to have new models ready well in advance of show time in November.

In the past, each division held its own press party and pre-announcement celebration, at different times.

Packard expects to have 600 new models ready for display purposes by Sept. 1. The plant has been closed since July 15 and in the past three weeks such a strong demand for additional cars has developed from dealers that the company is proposing to schedule another 4500 jobs in the 1938 series. Whether the necessary parts and materials can be obtained in time to put these additional models through in the next two weeks is now in process of being determined.

The revival of retail demand for cars in the past few weeks is a most encouraging sign. Trend of sales in July for most companies was contraseasonal; that is, deliveries were running ahead of the June rate, or if not ahead at least not far off the June rate. Buick for example, noted in the first 20 days of July a decline of 6.5 per cent from the like period in June, this drop comparing with a normal seasonal decline of 12.4 per cent. Chevrolet reported a 7 per cent increase in new car sales for this July period, together with a 15 per cent increase in used car sales. At the same time, used car stocks were reduced by 16,000.

Ford plants are closed this week and next for inventory, with resump-

BY A. H. ALLEN
Detroit Editor, STEEL

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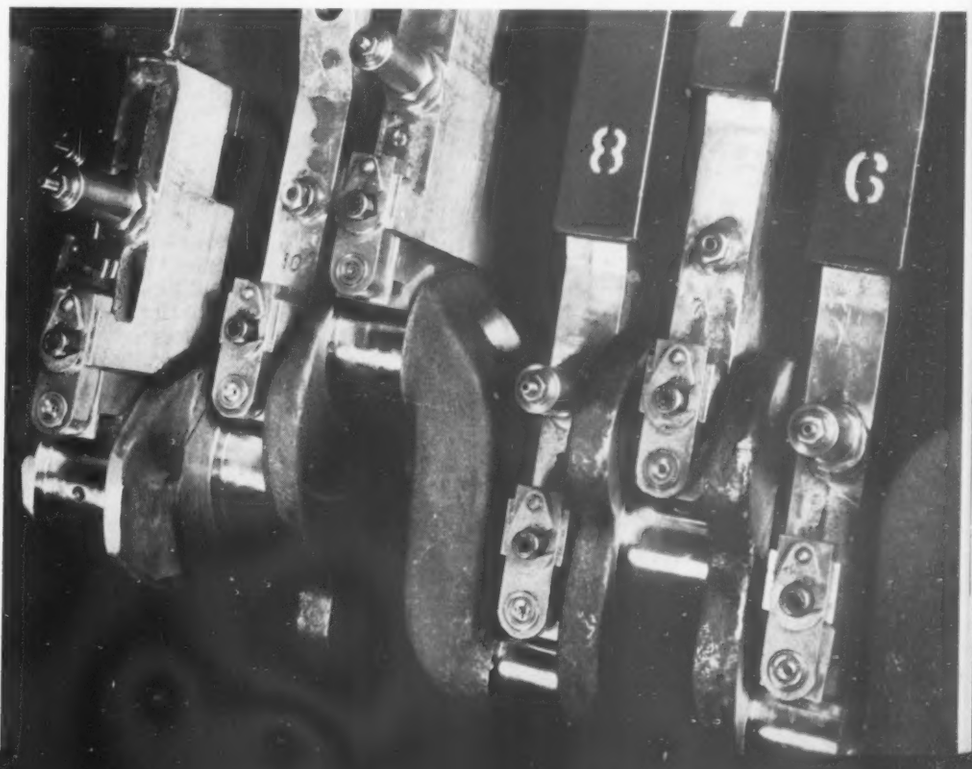
"Superfinishing" Method

■ **As mentioned in STEEL, Aug. 1, p. 23, Chrysler Corp. is making extensive use of a "superfinishing" process on brake drums, flywheels, crankshafts, camshafts, pistons and cylinder walls. Here is a closeup of the superfinishing tools devised for smoothing main and pin bearings on crankshafts. The numbered rods carry the abrasive tools and in operation these rods are oscillated as the shaft is turned. Light pressures, a suitable oil, and fairly hard abrasives are essentials of the process**



tion on 1938 models set for Aug. 15. Little is heard on the probable date of new model production at the Rouge, although one report is to the effect Sept. 15 will see the first cars going down the line.

Steel tonnage for new Fords is likely to appear about Aug. 15 or shortly thereafter. Rolling schedules begin at the steel plant on this date, and it is indicated steel buying will come out about the same time.

It may or may not have been mere coincidence that the reports of concessions on cold-rolled autobody sheets were being circulated throughout steel circles here last week as Ford was preparing to buy. While practically all steel company offices had heard the report, no one could explain how it started, or whether any business was placed. This grade of steel already is $14 per ton below the price in force last year.

■ DEMONSTRATION soy bean plant has been put in operation by Ford at Saline, Mich., comprising two buildings with equipment having capacity for extracting and flaking 140,000 bushels of beans a year. Some 700 farmers in the vicinity of the plant are now growing soy beans from seed furnished by Ford. They return the advanced seed at the end of the season and sell the crop at the market price to Ford or other buyers.

Oil, comprising 18 per cent of the soy bean flake is extracted with hexane solvent, and is subsequently used in the manufacture of car finishes and as core binder. Meal from which the oil is extracted is used as the principal ingredient in soy bean plastics, employed extensively by Ford for molded knobs, handles, etc.

Construction of 19 miles of tunnels, conduits and underground power lines is an important part of the current Ford expansion program, entailing expenditure of about $1,750,000. New underground lines are required to extend water, gas, power and other facilities to new units of the plant now being erected. They range in size from a 10-inch watermain to tunnels 12 feet in diameter.

Included are 4.6 miles of gas mains, 4 miles of electrical conduits, each with 25 lines, 4.6 miles of mill water and city water mains, 3.1 miles of storm and sanitary sewers, 1.2 miles of high-pressure steam lines, 1 mile of tunnel for miscellaneous service lines, ½ mile of compressed air main.

This latest subterranean expansion will bring to 95 miles the total underground network at the Rouge plant.

■ ANNOUNCEMENT that Yellow Truck & Coach Mfg. Co. is currently supplying 125 motor coaches to three metropolitan bus lines, each vehicle equipped with hydraulic torque converter, has stimulated conversation in automotive circles concerning the "fluid flywheel" type of transmission, which does away with gears and the need for intermediate shifting in starting the vehicle. The "fluid flywheel" is really a foreign importation and is used on some cars produced abroad. Essentially, it involves a driving member with vanes fitting inside the driven member and the entire housing filled with a special fluid or oil. The driving member gradually brings the driven member up to its own speed, with the slippage or friction passing out through the oil and into the housing as heat. In effect it comprises a gearless, infinitely-variable transmission.

Chief difficulty hitherto has been the matter of dissipating the excessive heat generated. The device worked fine on small low-power European cars, but its application to the high-horsepower American vehicle was another thing.

Nevertheless the rumor is rather widely heard around Detroit that Chrysler may be about ready to announce the application of this type of transmission to one or more of its cars. Of course, nearly all automobile companies have been running some type of experimental work on the fluid flywheel in recent years, but until recently nothing was heard that would indicate its imminence in production.

If Chrysler is planning to take the lead and introduce the device on passenger cars, the project is being kept very quiet, but there are scattered reports this is the situation. It will bear watching. Chrysler has long had the reputation of pioneering new engineering developments, but in the past few years has achieved few technical "scoops." Perhaps the fluid flywheel may be the next big step in Chrysler engineering.

■ AN UNUSUAL development in the processing of steel is reported to have been perfected by a Port Huron, Mich., interest. Essentially it is the manufacture of cold-finished bars by cold extrusion from hot-rolled bar stock. Details of the method are being guarded as far as publicity is concerned, but in general the process involves automatic sandblasting of the hot-rolled bars to give a roughened surface which will hold lubricant, then pushing the stock through heavy extrusion dies in a special machine built for the work by a Cleveland concern. A variety of sections can be made, it is understood, and some of the automobile companies already are using the material in production.

Renewals of all contracts for parts and equipment going into 1939 models are reported by Electric Auto-Lite Co., Toledo, as well as some additional business. The company has developed a new type of electric windshield wiper which has been made standard equipment on the new Dodge, De Soto, Chrysler and Studebaker lines.

First of 125 diesel-electric coaches for operation in the Newark, N. J., district have been shipped by General Motors Truck & Coach Co. at Pontiac. Using the new 2-cycle diesel engine developed by General Motors, the coaches have engines and generators mounted transversely in the rear, some with 4-cylinder and some with 6-cylinder power plants.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
6 mos.	2,594,508	2,916,869	1,306,032
July	451,206	456,909	*130,000
Aug.	275,934	405,072	.....
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated.

Estimated by *Ward's Reports.*

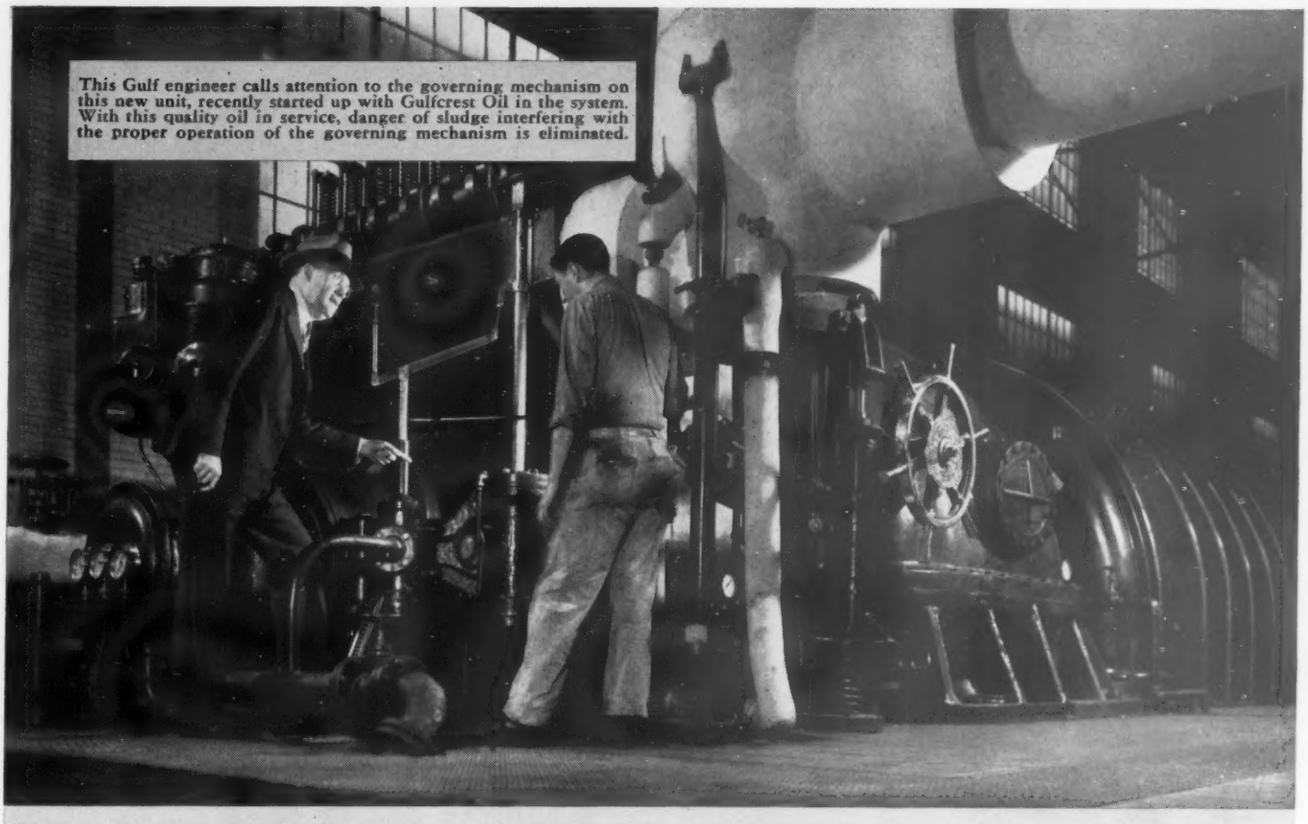
Week ended	
July 9	25,375
July 16	42,010
July 23	32,070
July 30	30,390
Aug 6	14,771

	Week ended Aug. 6	July 30
General Motors	10,800	11,800
Chrysler	800	770
Ford	575	12,800
All others	2,596	5,020

Completes Facilities For Galvanized Sheets

■ Great Lakes Steel Corp., Detroit, has announced completion of facilities for production of galvanized flat sheets, sheets for roofing purposes in the construction field, and corrugated culverts for roads and highways.

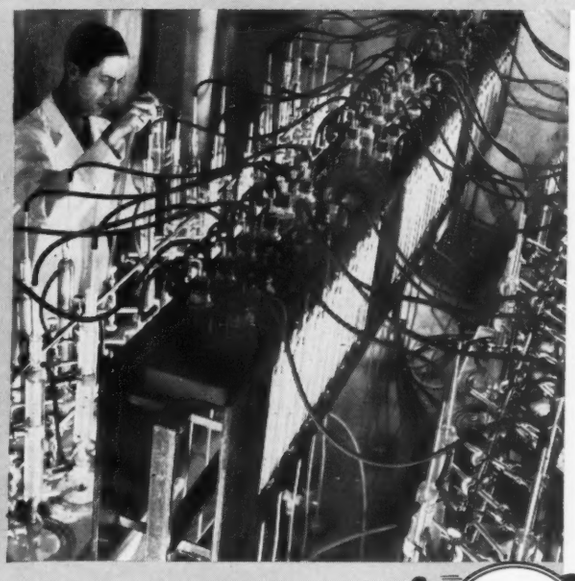
Latest type of equipment for continuous galvanizing of strip up to 60 inches in width, 10 gage and lighter, has been installed, further rounding out the various lines of flat-rolled material supplied by the mill.



This Gulf engineer calls attention to the governing mechanism on this new unit, recently started up with Gulfcrest Oil in the system. With this quality oil in service, danger of sludge interfering with the proper operation of the governing mechanism is eliminated.

GULFCREST OIL

...the quality leader for Steam Turbines



This intricate apparatus is used in the Gulf Research Laboratory to check the findings of Gulf's organic and physical chemists with regard to the life of Gulfcrest Oil in service.

HERE is one important reason for the remarkable stability of Gulfcrest Oil—this quality turbine oil has been *refined and purified by Gulf's exclusive Alchlor process.*

By applying this famous process to an already highly refined oil, as high as 20% of its volume—consisting of undesirable hydrocarbons and other impurities which cause oxidation and sludge formation—may be removed.

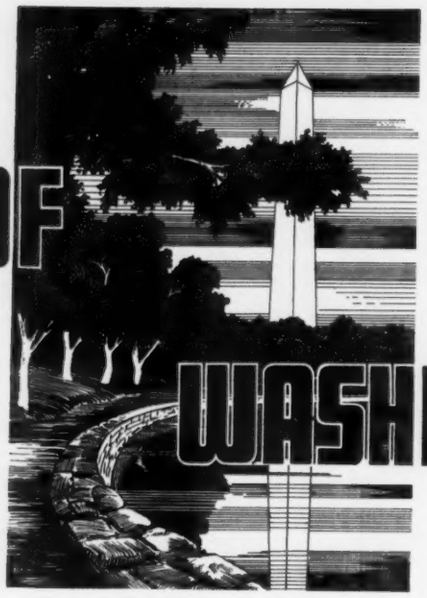
No wonder this turbine oil is making such outstanding records in plants from Maine to Texas! Power plant engineers find that after years of service Gulfcrest shows far less deterioration than any oil they have ever used.

There is a real quality story behind Gulfcrest Oil. Ask the Gulf engineer who calls at your plant to give you complete details.

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation
Gulf Refining Company
OFFICES: GULF BUILDING, PITTSBURGH, PA.

WINDOWS OF WASHINGTON



WASHINGTON

■ ALL INDICATIONS point to the fact that it will be some time before the division of public contracts of the labor department can recommend wages for the steel industry to Secretary of Labor Perkins. Last week the board notified those attending the recent hearing in Washington that the time for filing briefs, which originally was set for Aug. 16, had been extended until Aug. 22.

The board also sent a letter to some 500 steel fabricating companies asking them for wage information which was not furnished during the recent two-day hearing in Washington.

L. Metcalfe Walling, administrator of the Walsh-Healey act under which the division of public contracts operates, notified them that statements are to show the following:

"(1) name and address of the plant or plants; (2) total number of employes; (3) basic rate of pay to common labor; (4) number of common laborers being employed at basic rate; and (5) number of employes receiving less than basic rate, together with the classification of work done by such employe."

Mr. Walling has asked that five copies of these statements be submitted.

BY L. M. LAMM

Washington Editor, STEEL

FURTHER PREPARATIONS FOR ECONOMIC STUDY

The set-up for the monopoly, or so-called economic, division of the department of commerce under Dr. Willard Thorpe in connection with the work of the national economic committee has been completed. Ernest A. Tupper, who has recently been appointed chief statistician of the bureau of foreign and domestic commerce, will work directly under Dr. Thorpe. Dr. Thorpe will spend about three days a week in Washington, but the work will fall largely on Mr. Tupper, who has been associated with the department of commerce since 1930.

When any kind of study is required of the department of commerce for the economic committee, the matter will clear through Dr. Thorpe and Mr. Tupper, who in turn will call on the commodity divisions in the department of commerce. In the event that the commodity division does not have enough help to carry on such investigation, additional help will be employed. Little money is available for this work, but Mr. Tupper feels that comparatively little help will be needed other than the present personnel of the commodity divisions.

A statement was made some time ago by the officials of the committee that the old files of the NRA, which are now in custody of the department of commerce, will be used. No definite arrangements have yet been made about these files, but Mr. Tupper has stated that in the event they are used, they will be cleared through the office of Dr. Thorpe.

Mr. Tupper has been appointed by Assistant Secretary of Commerce Patterson, who is one of the members of the economic committee, to assist in co-ordinating certain studies to be undertaken by the bureau of foreign and domestic commerce, at the request of the economic committee. His duties will be technical and advisory and will include the examination of the statistical and research activities of the bureau, with a view toward maintaining co-ordinating procedure.

Mr. Tupper, who attended Georgetown university and the University of Pennsylvania, was an associate in the department of industrial research of the University of Pennsylvania and a member of the faculty at the time of his appointment to the department of commerce in 1930. Before he was made chief statistician, a few days ago, he was chief of the division of foreign trade statistics, having prior to that been assistant chief of the division of economic research of the department of commerce.

SEC has placed in the hands of the economic committee statistics and charts indicating concentrated control in New York of billions of dollars of investment company assets. This is one of the subjects which the committee officials announced would be studied.

APPOINTMENTS MADE FOR EDUCATIONAL ORDERS

Brig. Gen. Henry H. Arnold has been appointed by Assistant Secretary of War Johnson to head the group who will have charge of the preparation of educational orders to be distributed to industry by the war department under recent congressional authority.

Mention has been made a number of times in these columns of the proposed plan (see article in STEEL, July 25, p. 13) and it is now expected that first orders in the program of education for emergency will be placed with automobile manufacturers some time during September.

Others appointed by Secretary Johnson to work on this plan include Cols. C. T. Harris, H. K. Rutherford and James H. Burns, Ordnance Corps; Col. John W. N.

Schultz, Corps of Engineers, and Col. Leonard K. Sparks, Field Artillery, Capt. W. R. Winslow, Engineers, will act as recorder.

FEDERATION SEES FURTHER GAINS IN EMPLOYMENT

Signs of business improvement have multiplied in the past month, business confidence is strengthening rapidly, and production and prices are turning upward, according to the monthly survey of business of the American Federation of Labor.

The federation points out that the increase in unemployment has been checked and continues that "in May, when 292,000 lost their jobs, it appeared that the summer business decline had begun early. In June the reverse was true, for in a month when greater declines might have been expected, employment showed a very slight gain of 7000.

This was due partly to the stopping of industrial declines and partly to increased farm employment. Trade union employment reports for 24 cities which have been showing employment gains ever since March, recorded a much larger gain in early July than in June. Thus the trade union report forecasts still further improvement in employment."

It is pointed out by the federation that particularly important is the upturn in steel activity in July.

Summing up the present situation and outlook it says "we should stress the low level to which business has fallen in many industries, and the fact that buyers are as yet extremely cautious and are waiting for larger payrolls before ordering ahead. . . .

"Although unemployment has apparently stopped increasing and profits were better in the second quarter than the first, it will be many months before the depression losses can be recovered. A gradual recovery would be far more healthy than a rapid speculative advance. Although business executives and business observers are more hopeful and confidence is growing, we cannot yet say surely that the corner has been turned."

DEATH CLAIMS LEAD IN OLD-AGE SETTLEMENTS

Approximately 60 per cent of the claims for old-age insurance benefits now being filed with the social security board come from relatives or representatives of the estates of wage earners who have died, John J. Corson, of the board, states. Of the 18,061 claims certified for payment in June, 10,942 were death claims, the remainder being the claims of wage earners who had reached the age of 65.

Mr. Corson added that until the beginning of the present year the number of claims filed by wage earners and those filed by the heirs of deceased workers were approximately the same. Since then, however, there has been an almost steady increase in the number of death claims. This increase is believed to be due largely to the growing size of the benefits and to a more widespread knowledge of the old-age insurance provisions of the act.

Of the $861,530 in claims certified for payment during June, $497,762 was for death payments to the heirs of deceased workers and $363,768 for payment of claims of those reaching the age of 65. For both types of claims the average payment in June was $47.70, with death payments averaging $45.49, and life payments $51.10.

The total amount of all single cash payments authorized by the board since the old-age insurance system went into operation Jan. 1, 1937, had reached $5,915,367.13 by the end of June. Of this amount, $3,216,550.33 has been certified for 92,855 death claims, and $2,698,816.80 for 76,767 life claims.

NEGOTIATING RENEWAL OF RUSSIAN TRADE TREATY

Negotiations are now under way between the state department and the Russian government for a renewal of the present commercial agreement between the two countries which has been extended from year to year for the past several years.

Under the agreements the Soviet government receives most favored nation treatment from the United States and in return it guarantees to purchase commodities totaling certain amounts from the United States. During the present agreement, which ended on Aug. 5, the Russian government promised to purchase at least $40,000,000 of American products during the year. The Russians have purchased more than $40,000,000 of commodities from this country during the past month.

NEW PRICING PLANS GIVE MONOPOLY NO ADVANTAGE

Although methods of industrial price making have undergone a vast change since the days when nearly all prices were fixed by direct market bargaining, this change has not brought a net decline in competition, according to the report of a study made public by the Brookings Institution. Modern competition may be more beneficial to the people than that of earlier times, inasmuch as it develops new and better products, raw materials, and ways of satisfying human wants, rather than being concerned solely with price.

Efforts to maintain artificially high prices under modern competitive conditions have little chance of success over a period of years, and the price-fixing power of so-called monopolies has clearly diminished, the report says. Even if a concern has an effective monopoly on a particular product, it is likely, under modern technical conditions, to meet keen competition from other products that satisfy consumer wants in different ways.

The study, "Industrial Price Policies and Economic Progress," was made by Dr. Edwin G. Nourse, director of the institute of economics, and Dr. Horace B. Drury, a member of the staff. It analyzes today's technology and pattern of business organization as well as the new philosophy of prices, and continues the general line of investigation of income distribution in relation to economic progress which was begun at the institution about five years ago.

JAPAN RESTRICTS USE OF IRON AND STEEL

A radio report from the American commercial attache at Tokyo to the department of commerce states the Japanese ministry of commerce has issued an order prohibiting the use of iron and steel, including scrap, in the manufacture of more than 100 articles, including kitchen utensils, electric accessories and athletic goods.

The Japanese steel material federation has reached a decision to curtail about 16 per cent of the output of all steel materials, excepting those for manufacturing armaments, munitions and heavy rails, until Sept. 30. Output of small gage steel sheets was cut 35 per cent and that of steel tubings 25 per cent.

GERMANS INDIFFERENT TO ROLLED WIRE SYNDICATE

It appears that the German iron and steel industry is disdainful of efforts made to prolong the international rolled wire export syndicate, according to advices from the American consul at Cologne. This lack of interest is stated to have as its origin the lower German exports of rolled wire over the past several years.

It is said German manufacturers do not expect a material improvement in their rolled wire export trade in the near future and point to the fact that their former important markets in the Far East and South America have been partially lost to American manufacturers.

In 1929 Germany exported 197,817 metric tons of rolled wire, that figure dropping to 29,749 tons in 1932. Exports totaled 44,608 tons in 1933 and in 1937 they reached 59,431 tons. During the first four months this year, shipments amounted to 9803 tons. Prior to 1935, shipments from the Saar district were not included in German exports.

MEN OF INDUSTRY

■ R. C. HELM, superintendent, Trenton, N. J., works, American Steel & Wire Co., has been transferred to Cleveland as superintendent of Consolidated works, succeeding Fred Gage, retired.

E. J. Reardon, previously superintendent at the New Haven, Conn., plant, has been made general superintendent of that plant and the Trenton works. In addition to the supervision of these plants, Mr. Reardon's duties will include supervision and direction of wire rope engineering, bridge engineering, etc. He will be located at New Haven.

S. B. Metcalf, who has been general foreman of the rope department at New Haven, becomes superintendent, Trenton works, and R. Murray, previously general foreman of wire department at New Haven, becomes assistant superintendent, New Haven works.

E. E. Caspell succeeds Mr. Metcalf as general foreman of the rope department at New Haven. Previously he had been assistant foreman in that department.

Mr. Gage's retirement comes after 46 years of service with the company. He was employed as a clerk for the Washburn & Moen Mfg. Co. in August, 1892, and when that company was absorbed by American Steel & Wire he remained and worked successively as assistant superintendent at Donora, Pa., superintendent at Farrell, Pa., and superintendent of the Consolidated works, Cleveland.

♦

James Suttie has been named general manager in charge of sales and production, industrial division, American Steel Foundries, Chicago.

♦

Alan A. Garland has been made general purchasing agent, Standard Sanitary Mfg. Co., Pittsburgh. He succeeds the late George J. Black.

♦

J. L. Singleton, who has been in charge of Allis-Chalmers Mfg. Co.'s Denver district office, has now been appointed manager of that office.

♦

George C. Smith has been made Chicago district sales representative of the small tool division of Taft-Peirce Mfg. Co., Woonsocket, R. I.

♦

Robert J. Davis has been elected president and general manager, Johnston & Jennings Co., Cleveland, manufacturer of special machinery, forgings and stokers. He succeeds Tracy J. Calhoun, elected chairman of the board. Mr. Davis has been a director of the company for the past two and one-half years, and is a grandson of the late Robert Johnston, who was one of the founders of the business in 1884.

♦

J. W. Herman has been elected treasurer, Lukens Steel Co., Coatesville, Pa., succeeding the late George Thomas III. He joined Lukens in January, 1916, as a clerk in the accounting department and after a year was transferred to the purchasing department as secretary to H. B. Spackman, vice president and purchasing agent. In June, 1918,

J. W. Herman

Mr. Herman joined the army and served in the ordnance department at Raritan arsenal. Following his discharge in June, 1919, he returned to Lukens, serving successively as a clerk in the purchasing department, assistant auditor, and assistant secretary and assistant treasurer.

♦

Philip Norman, the past four years associated with the Michigan Tool Co., Detroit, in the purchasing department, has been promoted to chief purchasing agent. He succeeds the late Harry A. Duffey.

♦

Elmer E. Erickson has been appointed manager, bureau of sales statistics, Carnegie - Illinois Steel Corp., Pittsburgh. Mr. Erickson, formerly assistant manager of the bureau, has been associated with United States Steel Corp. subsidiaries since 1918.

♦

Frederick V. Gier, president, Cincinnati Milling Machine Co., has accepted the Cincinnati social and tours chairmanship for the International Management congress which will convene in Washington, Sept. 19-23.

♦

C. M. Peter, the past 15 years managing director of Black & Decker Ltd., is now associated with the Fellows Gear Shaper Co., Springfield, Vt., as general sales manager, with headquarters at the company's Detroit office in the Fisher building. He succeeds W. F. Slomer, who has retired because of ill health.

♦

John H. Goss has been elected president and general manager, Scovill Mfg. Co., Hartford, Conn., succeeding the late E. O. Goss. L. P. Sperry, in addition to his duties as treasurer, has been elected executive vice president, and Frank Reeves has been named to the executive committee.

♦

Edward G. Hackbarth has been elected vice president and assistant treasurer, Peck, Stow & Wilcox Mfg. Co., Southington, Conn. S. C. Wilcox, in addition to his duties as secretary, has been elected treasurer. The positions of vice president and treasurer were formerly held by Charles F. Treadway, resigned.

♦

John C. Murphy has been appointed Detroit district sales manager, Cuyahoga Steel & Wire Co., Cleveland. Mr. Murphy was formerly associated with the Union Drawn Steel Co. as metallurgist and later represented the company in Detroit as metallurgical salesman. Prior to that he spent four years with Jones & Laughlin Steel Corp. in metallurgical work.

♦

Benjamin D. Brown, president, treasurer and a director, Albion Malleable Iron Co., Albion, Mich., has resigned due to illness. Collins L. Carter, vice president, has been elected president. Other new officers are: Chairman of the board, Raymond H. Gardner, formerly executive vice president; vice president in charge of production, Alvin Dice; and vice president, Thomas J. Lloyd. M. B. Murray continues as secretary and a member of the board.

♦

Benjamin Schwartz, who recently announced his resignation as director general of the Institute of Scrap Iron and Steel Inc., New York, will become vice president of Schiavone-Bonomo Corp., effective Aug. 15. Mr. Schwartz will serve the corporation in connection with legal, industrial, labor and public relations, as well as in the merchandising field. He will represent the corporation in the institute. The corporation is planning an expansion program which includes construction of a

new model scrap preparation plant in Jersey City, with a central office building.

♦

William W. Bond has been appointed western sales manager, positive drive division, Link-Belt Co., with headquarters at the Dodge plant in Indianapolis. He succeeds the late G. Howard Burkholder. Mr. Bond has been associated with Link-Belt since 1911, first serving in the engineering department at the Philadelphia plant. For the past 15 years he has been engaged in the sale of roller chain drives.

Ralph S. Dyson, for many years manager of stock silent and roller chain drives through distributors, has also been placed in charge of roller chain sales to duplicate machinery manufacturers.

♦

J. E. Weit has been elected president, Atlas Bolt & Screw Co. and Atlas Car & Mfg. Co., Cleveland,

J. E. Weit

succeeding the late S. D. Wright. John F. Harrison has been elected chairman of the board of both companies, and E. W. Schellentrager, former chief engineer of the car division, vice president. Mr. Weit, heretofore vice president, has been identified with the Atlas company since 1900.

♦

Arthur A. Day, for 46 years associated with the Buffalo Forge Co., Buffalo, retired June 27 as superintendent of the fan shop and all sheet metal working departments. Born in Boston in 1871, Mr. Day in 1888 started as a helper in the Monroe Furnace Co. Subsequently he worked for the M. F. Talmage Sheet Metal Works, Berkhausen Sheet Metal Shop, and in 1892 joined the Buffalo organization.

♦

Edward S. Coe Jr., associated with the sales engineering department of the Buffalo plant of Farrel-Birmingham Co. Inc., Ansonia, Conn., has been transferred to the Chicago office to promote the sale of Farrel-Sykes herringbone gears and gear units, made at the company's Buffalo plant. A graduate of Worcester Polytechnic institute, 1931, Mr. Coe was associated with American Steel & Wire Co. and Reed-Prentice Co. before joining the Farrel-Birmingham company.

DIED:

■ WILLARD WILSON, 74, vice president in charge of sales, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., until his retirement July 30, 1932, at his home in Franklin, Tenn., July 31. Mr. Wilson was first employed in the Ohio works of National Steel Co., leaving that company in 1901 to join the Tennessee organization. At the time United States Steel Corp. took over the Tennessee company in 1907 Mr. Wilson was made assistant general manager of sales, and nine years later was advanced to general manager of sales. In April, 1926, he was elected vice president in charge of sales. He is survived by his widow and one son, Parker F. Wilson, assistant to the president, Wheeling Steel Corp.

♦

Samuel H. Ralston, former sales manager for the Caterpillar Tractor Co., at his home in St. Louis, recently.

♦

Lewis Oakley Brewster, 69, retired vice president and general manager, New York Insulated Wire Co., in Elizabeth, N. J., July 30.

♦

Orland F. Baughman, 62, retired president, Dickey-Grabler Co., Cleveland, in that city, recently. He retired five years ago because of ill health.

♦

Henry H. Bighouse, 70, sales engineer, C. O. Bartlett & Snow Co., Cleveland, in that city, July 24. He had been associated with Bartlett & Snow since 1905.

♦

Charles N. Ballentine, 52, southern district sales manager for the Bucyrus-Erie Co., with headquarters in Birmingham, Ala., July 24 at Lakeland, Fla.

♦

William L. Hamilton, 53, founder, William Hamilton Mfg. Co., Cleveland, in that city, July 25. Mr. Hamilton for 17 years was president, Commercial Gauge Co. until he founded his own business in 1935.

♦

Herbert M. Wilcox, 56, vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in New York, July 28. He was in charge of the new products division, having recently been active in introducing the Precipitron.

♦

Allen T. Enlow, 64, president, Lysaght Dominion Sheet Metal Co., Hamilton, Ont., in Toronto, Ont., July 26. Born in Wheeling, W. Va., in 1874, his first employment was with the United States Steel Corp. Later he became sales manager, Berger Mfg. Co., Canton, O. He went to Canada in 1913.

♦

Edwin H. Martin, 74, well known metallurgist, at his home in Buffalo, July 30. Earlier in his career he was identified with the Lukens Steel Co., Coatesville, Pa., Diamond State Steel Co., Wilmington, Del., Carnegie Steel Co., Pittsburgh, Upson Nut Co., Cleveland, and Buffalo Bolt Co., Buffalo.

♦

John Keifer, 62, for ten years superintendent, Mid-West Forge Co., Cleveland, in that city, July 25. For a number of years before joining Mid-West, he was superintendent, City Forge Co. He was also experimental engineer for the Pittsburgh Crucible Steel Co. until his retirement 18 months ago.

♦

Lewis E. Curtis, 74, consulting engineer and inventor of the Curtis diamond mesh expanded metal rotary lath machine, recently. The past ten years he operated as a consulting engineer during which time he designed and supervised the building of machines for the metal lath industry. He held many patents covering the manufacture of expanded metal and machine designs in this field.

University of Minnesota's Mining Directory Issued

■ Mining Directory of Minnesota for 1938, published by the mines experiment station, University of Minnesota, Minneapolis, has been released. Contained are maps of operating and exhausted mines, reserve properties and beneficiation plants; list of all mines and properties; list of companies; general statistics; and a partial list of the men associated with the mining industry.

Estimated iron ore reserves of Minnesota, excluding low-grade nonmerchantable ore, but including stockpiles, are given as 1,267,706,276 tons, highest since 1933 when reserves totaled 1,289,245,511 tons. Michigan reserves are estimated at 148,577,346 tons, compared with 154,032,944 tons last year.

July Iron Output Up 10.7 Per Cent; 10 Stacks In

■ WITH July registering the first increase since March, the decline in production of coke pig iron in the United States appears to have been arrested. Not only was the rise in daily production significant, but number of furnaces operating increased, the first of such gains since July, 1937.

Average daily production in July was 39,122 gross tons, an increase of 3764 tons, or 10.7 per cent, over the June rate of 35,358 tons. This was the highest daily rate since May with 40,675 tons. July, 1937, rate was 112,947 tons.

Total production in July was 1,212,784 gross tons, an increase of 152,037 tons, or 14.3 per cent, over June production of 1,060,747 tons. This monthly total was the largest since May with 1,260,937 tons and compared with 3,501,359 tons made during July, 1937.

MONTHLY IRON PRODUCTION

Gross Tons

	1938	1937	1936
Jan.	1,444,862	3,219,741	2,029,304
Feb.	1,306,333	3,020,006	1,838,932
March	1,470,211	3,470,470	2,046,121
April	1,388,008	3,400,636	2,409,474
May	1,260,937	3,545,180	2,659,643
June	1,060,747	3,115,302	2,596,528
July	1,212,784	3,501,359	2,595,791
Tot. 7 mo.	9,143,882	23,272,694	16,175,793
Aug.	.....	3,616,954	2,711,726
Sept.	.....	3,417,960	2,728,257
Oct.	.....	2,891,026	2,991,794
Nov.	.....	2,007,031	2,949,942
Dec.	.....	1,503,474	3,125,192
Total	.....	36,709,139	30,682,704

Total production for first seven months this year amounted to 9,143,882 gross tons, a loss of 14,128,812 tons, or 60.4 per cent, compared with production of 23,272,394 tons for first seven months of 1937. Total production during the corresponding period in 1936 was 16,175,793 tons.

Relating production to capacity, operations in July averaged 28.2 per cent. June operations averaged 25.4 per cent; May, 29.4 per cent; April, 33.4 per cent.

Number of active blast furnaces registered an outstanding increase, jumping from 67 on June 30 to a total of 77 on July 31. After falling without interruption for 11 months, this gain is significant. The July total was just below the March figure of 79 stacks. In July, 1937, operating furnaces totaled 192.

During July, three merchant furnaces resumed operation. In the nonmerchant or steelworks class, eight furnaces were put in operation and one was taken out. This made a net gain of three merchant and seven steelworks furnaces, a total of ten for the month.

AVERAGE DAILY PRODUCTION

Gross Tons

	1938	1937	1936	1935
Jan.	46,608	103,863	65,461	47,692
Feb.	46,655	107,857	63,411	57,675
March	47,426	111,951	66,004	57,120
April	46,267	113,354	80,316	55,719
May	40,675	114,360	85,795	55,986
June	35,358	103,843	86,551	51,949
July	39,122	112,947	83,735	49,043
Aug.	.....	116,676	87,475	56,767
Sept.	.....	113,932	90,942	59,009
Oct.	.....	93,259	96,509	63,818
Nov.	.....	66,901	98,331	68,876
Dec.	.....	48,499	100,813	68,242
Ave.	43,131	100,573	83,832	57,694

Furnaces blowing in during July were: In Ohio: River No. 1 and Youngstown No. 2, Republic Steel Corp. In New York: Standish, Chateaugay Coal, Iron & Railroad Co. In Pennsylvania: Bethlehem G, Bethlehem Steel Co.; Monongahela No. 3, National Tube Co.; Neville Island, Pittsburgh Coke & Iron Co.; one Monessen, Pittsburgh Steel Co. In Alabama: Fairfield No. 6, Tennessee Coal, Iron & Railroad Co.; one Woodward, Woodward Iron Co. In Illinois: South Works New No. 5, Carnegie-Illinois Steel Corp. In Indiana: Gary No. 1, Carnegie-Illinois Steel Corp.

The only stack suspending was Cambria H, Bethlehem Steel Co., in Pennsylvania.

JULY IRON PRODUCTION

	No. in blast last day of July	No. in blast last day of June	Total tonnage Merchant	Total tonnage Nonmerchant
Ohio	19	17	44,965	229,447
Penna.	21	18	14,186*	329,151*
Alabama	7	5	45,866	42,765
Illinois	5	4	32	94,774
New York	6	5	39,005	61,028
Colorado	2	2		
Indiana	6	5	10,196*	218,826*
Maryland	4	4		
Virginia	1	1		
Kentucky	1	1		
Mass.	0	0		
Tenn.	0	0		
Utah	1	1	4,884	77,659
West Va.	1	1		
Michigan	2	2		
Minnesota	1	1		
Missouri	0	0		
Total	77	67	159,134	1,053,650

*Includes ferro and spiegeleisen.

Turkey Progressing With Steel Plant

■ Construction of an iron and steel plant at Karabuk, Turkey, about 125 miles northwest of Angora, the Turkish capital, started in April, 1937, is being carried forward. Construction is in charge of H. A. Brassert Co. Ltd., London, a branch of H. A. Brassert & Co., Chicago.

Cost of the plant will be about 18,000,000 Turkish pounds and will represent the largest individual industrial investment in Turkey. Financing is to be spread over eight years and payment will be to the Anglo-Turkish comptoir in London by marketing ores and minerals in the United Kingdom and the British Empire.

RATE OF OPERATION

(Relation of Production to Capacity)

	1938[1]	1937[2]	1936[3]	1935[4]
Jan.	33.6	76.6	48.2	34.2
Feb.	33.6	79.5	46.4	41.4
March	34.2	82.5	48.5	41.0
April	33.4	83.7	59.1	40.0
May	29.4	84.3	63.1	40.2
June	25.5	76.6	63.6	37.2
July	28.2	82.9	61.5	35.2
Aug.	....	85.7	64.3	40.7
Sept.	....	83.7	66.9	42.5
Oct.	....	68.4	71.0	45.8
Nov.	....	49.3	72.3	49.5
Dec.	....	35.6	74.2	49.0

[1] Based on capacity of 50,606,400 gross tons, Dec. 31, 1937; [2] first half on capacity of 49,512,737 tons, Dec. 31, 1936—second half on capacity of 49,727,737 tons, June 30, 1937; [3] capacity of 49,777,893 tons, Dec. 31, 1935; [4] capacity of 50,845,741 tons, Dec. 31, 1934. Capacities by American Iron and Steel Institute.

The works include coke ovens, two blast furnaces, steel production units, rolling mill, tube works and powerhouse of 15,000 kilowatts capacity. Consumption of raw materials is estimated at 1200 tons daily of iron ore, 220 tons of limestone and 1300 tons of coal. By-product coke ovens will produce benzol, ammonia and tar. Annual output of pipe and tubes is estimated at about 20,000 metric tons.

Imports into Turkey for the year ended Dec. 31, 1937, included 59,759 tons of miscellaneous iron and steel products, 16,368 tons of railroad rails, 16,136 tons of sheets, 15,077 tons of plates and 9786 tons of "heavy iron products." Germany has been the leading supplier of this market.

Steel for Peace, In Bridge Series

■ FIVE separate bridges and 8½ miles of approaches and connecting roadways form the newest link between the United States and the Dominion of Canada, from Collins Landing, N. Y., near Alexandria Bay, to Ivy Lea, Ont., near Brockville, crossing the Thousand Islands of the St. Lawrence. Dedication ceremonies Aug. 18 will also mark the exact date of completion of 100 years of peace between the nations.

Steel made possible construction of this link at a time other countries are speeding war preparations and using steel for destructive purposes. Lord Tweedsmuir, governor of Canada, and Prime Minister Mackenzie King will represent Canada and President Roosevelt has provisionally accepted an invitation to represent the United States at the dedication ceremonies.

Bridge Structures

The bridges in the crossing are: The American channel suspension bridge from Collins Landing to Wellesley Island, with 800-foot main span and 150-foot underclearance above the river; International Rift bridge over the boundary between Wellesley and Hill islands, a 90-foot rigid frame arched span of reinforced concrete; a continuous truss of two 300-foot spans from Hill Island to Constance Island; a steel arch of 348-foot span from Constance to Georgina Island; Canadian channel suspension bridge with 750-foot main span and 120-foot clearance, from Georgina Island to the Ontario mainland.

The most symbolic link in this chain is the reinforced concrete arch from Wellesley to Hill island, on which bronze tablets and a brass strip across the roadway designate the exact position of the international boundary.

Presence of rock at the surface or slightly below offered unusual opportunities for pier footings and reduced expense of construction to a low point compared with usual conditions. Cost ratio of substructure to superstructure was 1:5 while the normal economical plan predicates equal costs.

In constructing anchorages for the American channel suspension span steel piles of 14-inch, 89-pound H-beams were driven, 64 being placed vertically and 68 battered to resist cable pull.

Ends of the 37 strands of cable, each 1¼ inches in diameter, are connected separately and adjustably to the ends of round steel bars 2⅜ inches in diameter embedded in the anchorage concrete. Threaded sockets connect strands to bars and when tension was equalized the sockets were welded to prevent movement.

The bridges carry a two-lane roadway, 22 feet wide, and two sidewalks. The roadway is armored concrete, 4¼-inch I-Beam-Lok.

Construction was under auspices of the Thousand Islands Bridge authority, Watertown, N. Y., established by the New York legislature. The Canadian franchise of a private company formed to build the Canadian crossing has been transferred to the authority. Financing is by revenue bonds to be repaid from tolls and the bridge will become free when the bonds have been amortized.

Robinson & Steinman, New York, consulting engineers in charge of design and construction, designed the entire project. Contractors for the five principal portions were: Dominion Construction Co. for the American substructure; American Bridge Co. for the American superstructure; Cameron & Phin for the Canadian substructure; Canadian Bridge Co. for the Canadian superstructure; R. A. Blyth for the International Rift span.

High-Tensile Steel Used in New York City Trucks

■ **To pare weight without reducing strength, low-alloy, high-tensile steel was specified for more than 200 garbage truck bodies recently built for New York city by the Heil Co., Milwaukee. Steel made by Republic Steel Corp., Cleveland, was used in most of the units. The especially designed bodies have 22-cubic yard capacity, are almost 18 feet long and 8 feet wide. Gross weight of each unit is 37,000 pounds**

More Trucks, Tractors, Radios on U. S. Farms

■ Substantial improvement in farm living conditions since 1930 is revealed by a 1938 census survey covering 3000 farms in 40 states. Tractor ownership has increased 100 per cent; motor truck ownership, 50 per cent; automobile ownership, 10 per cent. The proportion of farm operators having electric lights, water piped into dwelling and water piped into bathroom are 50 per cent greater.

Of the farms included in the 1938 census, seven out of ten had automobiles; six out of ten had radios; four out of ten had electric lights. On three farms out of nine, water was piped into the dwelling, and on two of these into a bathroom. Three out of eight had telephones; one out of three had a tractor; one out of four had a motor truck.

The average farm dwelling contains six rooms, is valued at $1500.

Inland Steel Carrier Sets Ore Cargo Record

■ The L. E. Block, Inland Steel Co. ore carrier, arrived at Indiana Harbor, Ind., recently with 15,613 tons, 292 carloads, of iron ore, a new cargo record for 1938. The freighter, one of the five largest on the Great Lakes, established three cargo records for the Lake Superior district in 1937.

The boat was loaded at the Lake Superior & Ishpeming railroad dock at Marquette in 4 hours and 15 minutes. The load was a record cargo out of Marquette.

MEETINGS

BRITISH STEEL MEN TO INSPECT AMERICAN MILLS

■ MORE than 300 prominent British industrialists, engineers and metallurgists, will visit the United States in October at the joint invitation of the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers. The visiting group will consist of members of the Iron and Steel institute and Institute of Metals.

Joint meetings of the participating institutes are to be held in New York, Oct. 3-4, after which visits will be made to various steel and industrial plants in that area. The meetings are to start with a general session at the Engineering Societies buiding, Oct. 3, and will be followed with a banquet in the evening at the Waldorf-Astoria. A joint session will be held Oct. 4.

With the sessions in New York concluded, the visitors will go to Washington, and to the steel producing districts of Pittsburgh, Youngstown, O., Cleveland, Detroit, Buffalo and Chicago, where banquets and receptions are planned. They will return to New York Oct. 25. On the tour, the visitors will divide into two groups, one of which will inspect iron and steel plants, and the other nonferrous metal plants.

STEEL EXPERTS TO DISCUSS POURING PIT REFRACTORIES

Summer meeting of the refractories division, American Ceramic society, is to be held at the Bedford Springs hotel, Bedford, Pa., Sept. 2-3. The meeting will feature a program of interest to open-hearth operators and steel producers.

The technical session on Sept. 2 will be devoted to the subject of steel mill pouring pit refractories. Papers will be presented by representatives of Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Pittsburgh Steel Co., and Timken Roller Bearing Co. Dr. Walter J. Rees, department of refractory materials, University of Sheffield, Sheffield, England, will be a guest speaker.

Gilbert Soler, manager of research, Steel & Tube division, Timken Roller Bearing Co., Canton, O., is program committee chairman.

ARRANGING METAL MINING MEETING IN LOS ANGELES

Stanley A. Easton, president, Bunker Hill Mining & Concentrating Co., Kellogg, Idaho, has been elected chairman, Western division, American Mining congress, to succeed Oscar N. Friendly, vice president and general manager, Park Utah Consolidated Mines Co., Salt Lake City, Utah. As chairman of the division, Mr. Easton will take active part in shaping plans for the fifth annual metal mining convention and exposition in Los Angeles, Oct. 24-27.

Leaders in the metal mining industry from all producing states will meet at the convention to discuss common problems and the industry's relationship to the national government. An exposition of metal mining machinery, equipment and supplies, will be held in conjunction with the convention.

MANAGEMENT CONGRESS TO MEET IN SEPTEMBER

Contributions by management under a system of free enterprise to the rising standards of living will be dramatized by ranking leaders of industry at the seventh international Management congress in Washington next September.

"Free enterprise itself—that system within which management has been able to operate most successfully—is under fire," says Willis H. Booth, honorary chairman of the congress council. "It is all the more incumbent, then, on business leaders, if they have confidence in this system, to demonstrate its value as best they may and to take council diligently for its improvement.

Members of the congress council include many leaders in the metalworking and allied fields. Among these are: Lewis H. Brown, president, Johns-Manville Inc.; Howard Coonley, chairman, Walworth Co. Inc.; Rolland J. Hamilton, president, American Radiator Co.; Charles F. Kettering, vice president, General Motors Corp.; Walter J. Kohler, chairman, Kohler Co.; Morris E. Leeds, president, Leeds & Northrup Co.; John W. O'Leary, chairman, executive committee, United States Chamber of commerce; A. W. Robertson, chairman, Westinghouse Electric & Mfg. Co.; F. A. Schaff, president, the Superheater Co.; Alfred P. Sloan Jr., chairman, General Motors Corp.; Edward R. Stettinius Jr., chairman, United States Steel Corp.; Thomas J. Watson, International Business Machines Corp.

Census Shows Gains In Spring Industry

■ Steel spring manufacturers reported substantial increases in production, wages, cost of materials and employment in 1937 as compared with 1935, according to a census bureau report just released.

Wage earners employed increased 24 per cent, from 3146 to 3901; wages advanced from $3,565,714 to $5,803,978, or 62.8 per cent; material costs were 46.2 per cent higher, from $11,047,498 to $16,153,285; value of products increased 49.4 per cent, from $18,233,350 to $27,233,204.

Shotblasting After "Dishing"

■ **Shotblasting of spring steel disks for Chevrolet clutch assemblies is done after "dishing" and normalizing in this Tablast machine, each piece being run through the machine twice for cleaning both sides. Special fixtures are provided to hold the disks firmly**

More Jobs Can Be Created, If—

■ UNEMPLOYMENT in this country is increasing, according to Dr. Leo Wolman, in a thought-provoking address at the American Engineering council's recent forum on employment and the engineer's relation to it.

At the peak of the 1933-1937 recovery period unemployment in this country stood at 14 per cent. That compared with 4 per cent during 1922-1929, and with a negligible percentage during recovery periods before the war.

What are the causes of this trend whereby employment during a recovery period no longer is sufficient to re-employ those who lost their jobs during the preceding depression?

Not technology, said Dr. Wolman, despite the fact that technological improvement is blamed widely for unemployment. Rather, he believed, technology serves to reduce unemployment. Industries that are backward technologically, he found, contribute most heavily to unemployment.

No, Dr. Wolman concluded, the cause of unemployment is to be found in maladjustments and dislocations resulting from the various reform measures that have been applied to industry.

Accelerated Tempo of Reform Multiplies Economic Problems

Before the war reforms were comparatively slow and moderate and rather easily absorbed. Since 1920 the reform *tempo* has been accelerated. Dr. Wolman recited a long list of the new laws and administrative measures that now harass business.

Unless we refrain from further gross economic error, he predicted, our economic problems will multiply and unemployment will be at an even higher rate in future recovery periods than in that of 1933-1937.

This prediction is one with which no well-informed business man will quarrel.

Unless a good many of the recently enacted laws are modified drastically, and unless we have a federal policy friendly to and understanding of business, it is certain that there will be fewer jobs.

The whole present set-up demands that individual companies become more efficient if they are to continue in existence.

In particular this means a reduction in the number of workers on payrolls. The process goes on relentlessly.

Must Encourage Profit Motive, Ease Brakes on Business Expansion

Briefly, the principal factors that are making for unemployment at this time are:

Burdensome taxes, with the threat of even more burdensome taxes;

High unit wages and political insistence that these be maintained;

Insufficient flow of capital into industry because of new laws and policies which tend toward exploitation of industry by government and organized labor, and which fail to give adequate consideration to the stockholder;

Social security laws which greatly increase the tax and bookkeeping burdens of business organizations in direct proportion to the number of names on the payroll.

Industrial leaders generally believe that the problem of unemployment can be solved in the course of time if the spirit of reform is allowed to take a rest and the brakes now holding back business expansion are removed.

Re-establishment of conditions that will encourage the profit motive in business, they believe, is the only effective way to solve the unemployment problem.

Any other way, they believe, will kill the goose that lays the golden eggs.

THE BUSINESS TREND

Activity Index Substantially Unchanged

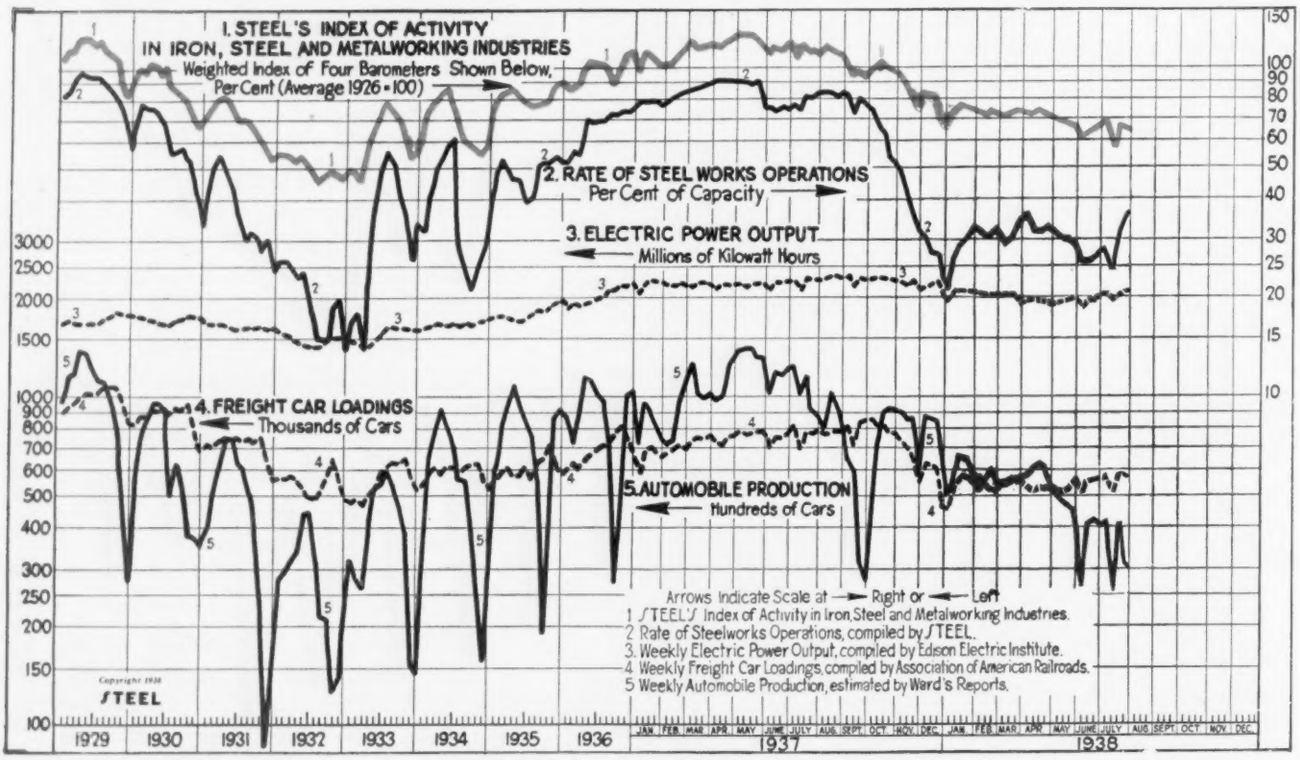
■ DESPITE a moderate improvement in two of the four barometers composing STEEL'S index of activity in the iron, steel and metalworking industries, the index eased slightly to 68.5 per cent in the week ended July 30. This represents a mild decline of 0.2 point from 68.7 per cent in the preceding week, and constitutes the second consecutive downward movement since the sharp upswing following the fourth of July holiday.

The rate of steelworks operations gained one point to 37 per cent in the week ended July 30, thereby breaking into new high levels for any week this year. There are indications that further gains will be registered in the near future, reflecting increased consumption among miscellaneous steel consumers and the placing of initial specifications by the automotive interests for 1939 models.

Revenue freight carloadings eased to approximately 566,500 cars during the week ended July 30. This represents a decline of nearly 36,000 cars from the peak this year of 602,300 recorded in the week ended April 16. A year ago at this time railroad freight traffic was placed at 782,660 cars. Electric power consumption recorded the third consecutive advance since the week ended April 9, to break into new high levels for any week since Dec. 18, 1937. However, power output of 2,093,907,000 kilowatt-hours for the week ended July 30 remains well below the same week a year ago.

Automobile production held substantially unchanged in the week ended July 30, due primarily to volume operations by Chevrolet and Ford. Inasmuch as Ford plants are now closed for two weeks, auto production will drop sharply in the week ending Aug. 6.

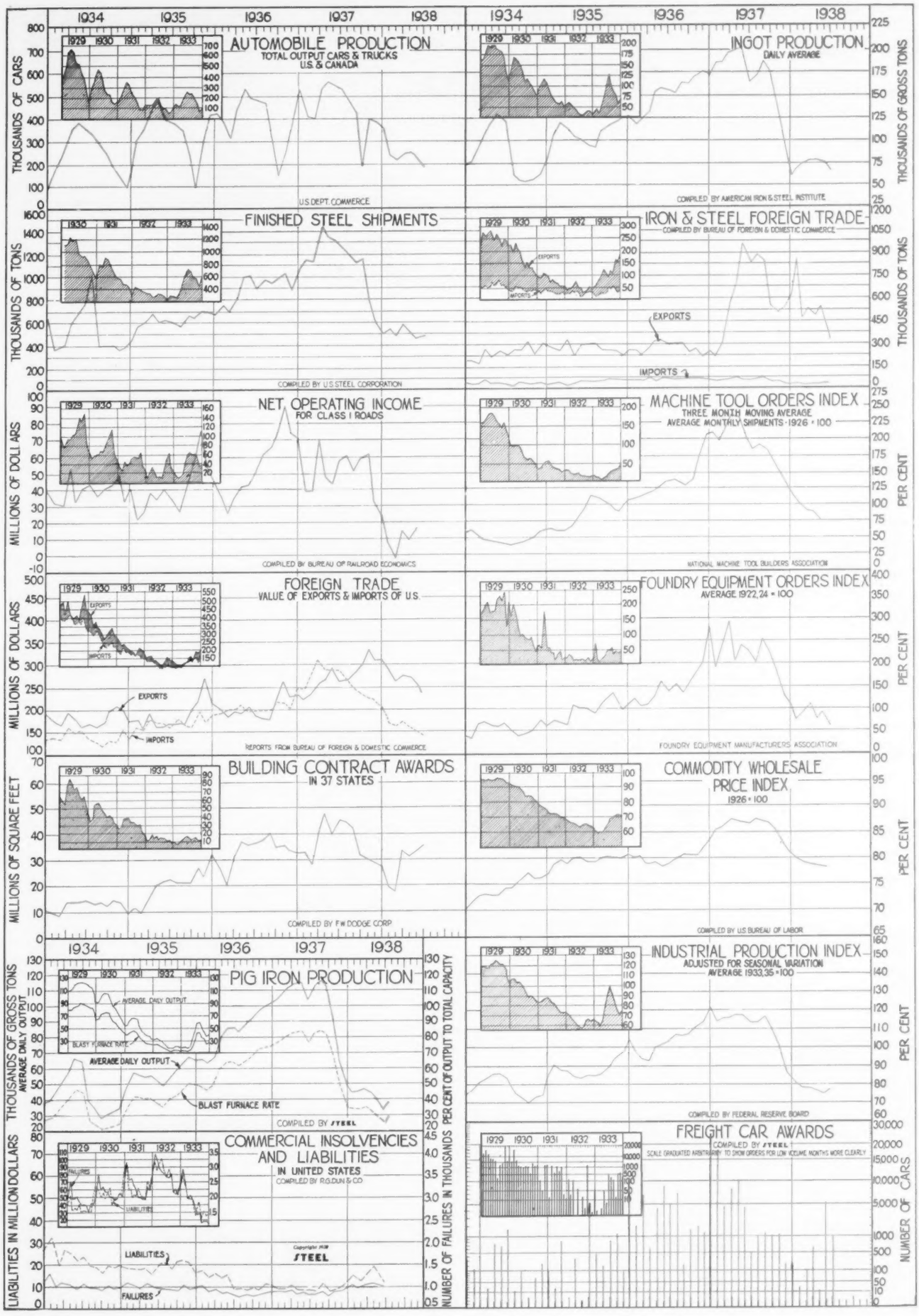
The general outlook for industrial activity still remains highly speculative, however business sentiment has improved somewhat on the basis of continued increase in the national steel operating rate and gains in a number of other industrial indicators.


1. STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below,
Per Cent (Average 1926 • 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at → Right or ← Left
1 STEEL'S Index of Activity in Iron, Steel and Metalworking Industries.
2 Rate of Steelworks Operations, compiled by STEEL.
3 Weekly Electric Power Output, compiled by Edison Electric Institute.
4 Weekly Freight Car Loadings, compiled by Association of American Railroads.
5 Weekly Automobile Production, estimated by Ward's Reports.
Copyright 1938 STEEL
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938

STEEL'S index of activity declined 0.2 points to 68.5 per cent in the week ended July 30:

Week ending	STEEL's Index of Activity Index No. 1938	1937	Steelworks Operating Rate Per Cent 1938	1937	Electric Power Output Million KWH 1938	1937	Freight Car Loadings 1938	1937	Weekly Auto Output 1938	1937
Apr. 30	68.4	123.9	32.0	91.0	1,938	2,193	543,075	782,423	50,755	139,475
May 7	68.5	123.5	31.0	91.0	1,939	2,176	536,140	767,481	53,385	140,188
May 14	67.2	123.2	30.0	89.0	1,967	2,194	541,813	773,669	47,415	140,396
May 21	67.1	122.2	30.0	91.5	1,967	2,198	545,808	779,276	46,810	131,306
May 28	66.5	115.6	28.5	75.0	1,973	2,206	562,061	794,855	45,120	131,421
June 4	58.1	105.1	25.5	75.0	1,878	2,131	502,624	692,140	26,980	101,629
June 11	64.4	111.4	25.5	74.0	1,991	2,214	553,854	754,360	40,175	118,798
June 18	65.2	110.3	27.0	75.5	1,991	2,213	555,569	756,289	41,790	111,620
June 25	66.0	112.8	28.0	74.0	2,019	2,238	558,937	773,733	40,918	121,032
July 2	66.5	115.3	28.0	77.5	2,014	2,238	588,864	806,168	40,945	122,890
July 9	57.1	103.8	24.0	74.0	1,881	2,096	501,013	682,205	25,375	100,981
July 16	69.9	115.7	32.0	82.0	2,084	2,298	602,300	770,075	42,010	115,380
July 23	68.7†	108.0	36.0	81.0	2,084	2,258	580,882†	770,980	32,070	88,055
July 30	68.5*	109.1	37.0	84.0	2,093	2,256	566,359*	782,660	30,390	86,448

*Preliminary. †Revised.


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS
IN 37 STATES
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1933,35 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
Copyright 1938 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF GROSS TONS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
PER CENT
MILLIONS OF SQUARE FEET
AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
NUMBER OF CARS

Finish and Wear

New equipment permits tests which show that wear is directly related to surface finish. It aids in the development of methods to produce smooth surfaces

By K. W. CONNOR
Micromatic Hone Corp.
Detroit

■ WEAR OF BEARINGS and operating parts may be divided into two classifications: Initial wear and operating wear. Initial wear appears contingent upon, and operating wear appears directly affected by surface character of assembled operating parts. It is generally agreed that rate of wear varies in relation to kind of materials and combined processing used; design of parts; their ability to resist corrosion, minimize erosion and abrasion and to support uninterrupted lubrication at all times. Characteristics of surface finish therefore appear of major importance in considering cause of wear and tests bear out this premise.

Aid in Controlling Finish

Ability to control generation of a final surface finish, approximating the existing standard for an optical flat, has been made possible by development of new hydraulic honing equipment for cylinder bores, new mechanical actuations of abrasive on external surfaces, and an instrument for measuring qualitative irregularities in finished surfaces. This new honing equipment controls unit pressures by balanced hydraulic actuations. Hydraulically actuated honing tools have definitely advanced into the scope of heavy stock removal under minimum conditions of molecular and structural disturbance of metals processed with increased accuracy and surface finish.

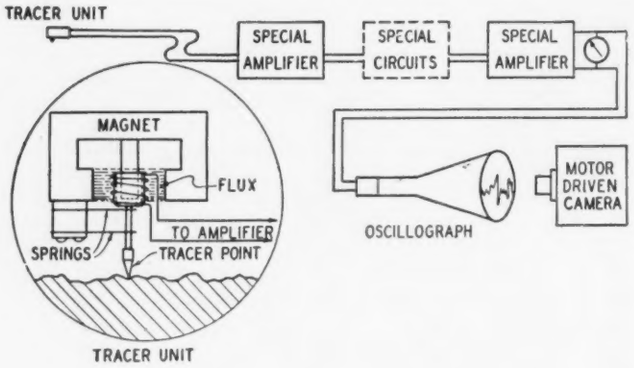


Fig. 1—Schematic diagram of Profilometer and its pickup head

Until recently, no factory type equipment has been available with which to measure accurately a final surface finish in daily production. The Profilometer was developed and introduced to meet this requirement. Its fundamental elements are shown in Fig. 1. Tracer method is used, tracer support being arranged with a tiny coil which operates in the field of a permanent magnet. Movements of tracer are translated into electrical voltages proportional to the velocity of movement.

These voltages are amplified and caused to produce displacements of the spot of a cathode ray oscillograph, proportional to displacements of tracer point. Profilometer circuit may be adjusted to separate different types of irregularities that exist simultaneously on a surface, that is, roughness and waviness. Readings provided are in microinches, millionths of an inch, root mean square values being given. Readings represent running average height of surface irregularities. This automatic-averaging feature is one of the Profilometer's principal advantages. Pictorial records of surface profiles may be made or a suitable oscillograph "sweep" can be used for visual observation.

One manufacturer is using new hydraulic honing equipment in high production of cast-iron cylinder bores cast in-block, holding selective, controlled, uniform finish. Figs. 4, 5, 6 and 7 were made at seven magnifications. Standard processing in this plant consists of rough boring, using four-blade piloted bars with stellite tipped cutters, removing 0.120-inch on the diameter. Surface produced is shown in Fig. 4 and profilometer reading for this surface ranges

Abstract from paper read at meeting of Society of Automotive Engineers at Milwaukee, April, 1938.

Fig. 2—Oil consumption. Cylinder walls with profilometer record shown here, with average roughness of 13 microinches, used 1 quart in 300 miles

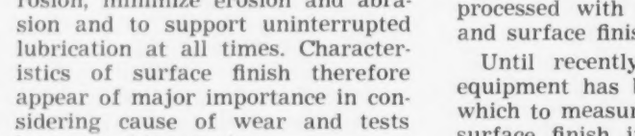
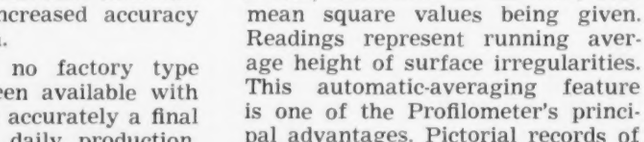


Fig. 3—Oil consumption on engine with cylinder walls giving this profilometer chart, average roughness of 9 microinches, was only 1 quart for 1500 miles



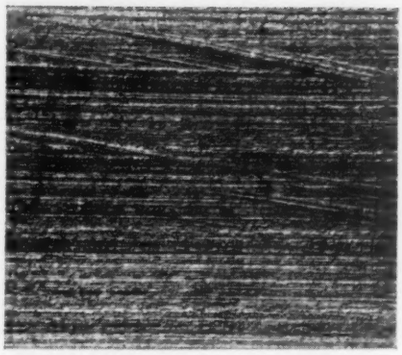


Fig. 4—Rough bore — profilometer reading of 150 to 200 microinches

from 150 to about 200 microinches.

Second operation is semifinish boring giving surface shown Fig. 5, using three-blade stub bars with Carboloy tipped cutters, removing 0.020-inch on the diameter. Profilometer reading is approximately 150 microinches, not materially smoother than in rough boring operation. Third operation comprises precision boring with single point Carboloy tipped cutters, removing 0.015-inch on the diameter. Resulting surface shown in Fig. 6 reads 60 microinches on the profilometer.

Actuated Hydraulically

In final operation, hydraulically actuated honing tools are used to remove approximately 0.0015 to 0.0020-inch on the diameter with an accuracy of 0.0003 to 0.0005-inch and with surface finish profilometer reading of 8 microinches. These photomicrographs provide an interesting study of surface character produced by these processing operations, and reveal the comparative uniformity of cutting action maintained throughout various operations and resulting in minimum percussion or burnishing action in process.

This same company made further studies of the relation between comparative final finishes and oil consumption as shown in Figs. 2 and 3. Tests indicated that in this engine a cylinder finish surface showing an average roughness of 13 microinches required one quart of oil during 300 miles of operation, whereas a finish surface showing average roughness of 9 microinches required only one quart of oil in 1500 miles of operation.

It has been indicated that boring, broaching, reaming, rolling or similar processes produce more or less molecular and structural disturbance of the surfaces processed. The disturbance thus created may, and usually does, persist throughout successive machining processes because of pressures and speeds required to actuate the tools. Percussion and bearing forces definitely account for tearing and burnishing of surface metal in various uncontrollable forms.

Microscopic examination substantiates this viewpoint, typical studies showing tearing and burnishing action of a reaming operation is still present following rough and finish honing operations, where mechanically actuated honing tools were used. In contrast to this, precision bored surfaces containing no apparent evidence of structural disturbance and similar surfaces finished with hydraulically actuated honing tools reveal a superior surface character and finish produced by this combined equipment and processing.

Hydraulically actuated honing tools are designed to operate under application of variable line pressure during honing cycle, with pressure increasing as total contact area between abrasive members and work metal is increased. For this reason, slightly coarser stones of much softer grade may be used for rough honing than with mechanically actuated tools. A typical surface of metal rough honed with hydraulically actuated tools shows a profilometer reading of 19 microinches.

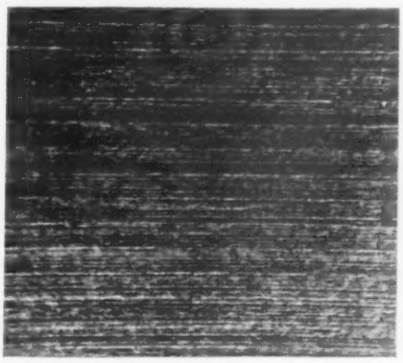


Fig. 5—Semifinish bore — profilometer read 150 microinches

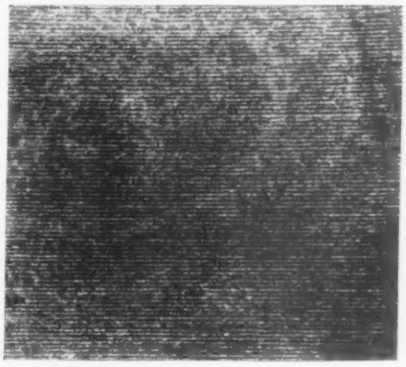


Fig. 6—Precision bore, third step, gives profilometer reading of 60 microinches

A honing application on reamed bores, comprising hydraulically actuated tools in roughing operation followed by mechanically actuated tools in finish honing operation permits removal of sufficient stock to eliminate practically all structural disturbances. This treatment produces a final surface finish showing a profilometer reading of only 2.8 microinches.

Current production processing is concerned with amount of variation which occurs in some processing operations such as on multiple cylinder-in-line applications. One manufacturer producing a 6-cylinder block recently adopted hydraulically actuated honing tools for rough honing operation following reaming. Bores are finished with mechanically actuated honing tools, removing a total of 0.004 to 0.0045-inch of stock after reaming. Accuracy averages from 0.0002 to 0.0003-inch for roundness and straightness, and final surface finish is held uniform within 3 to 4 microinches in regular production.

Applied to Tractor Sleeves

Another adaptation of this equipment is being used by a manufacturer of cast-steel alloy tractor sleeves, 5¾ inches diameter by 15 inches long, with a hardness of 45 to 50 Rockwell C. In former practice, these sleeves were rough and semifinish bored, then hardened, in which process they were subject to considerable distortion which necessitated a relatively costly grinding operation after hardening. Hydraulically actuated honing tools were adopted, permitting as much as 0.012-inch stock removal per minute, correcting distortion produced by hardening, and eliminating grinding.

In this application, an average of 0.022-inch stock is removed in rough honing operation, leaving approximately 0.001-inch stock for finish honing operation. Accuracy is within 0.0005-inch for roundness and 0.0007 to 0.0010-inch for straightness. Production is at a rate of 20 sleeves per hour, and 73 sleeves per set of honing stones. A 2-stage fixture is used, permitting

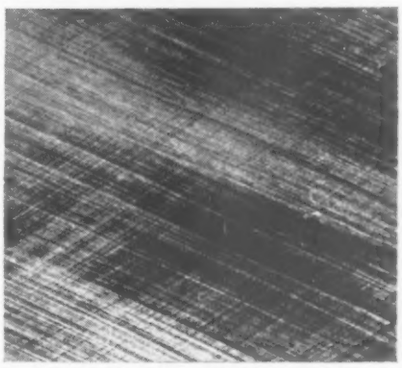


Fig. 7—Finish hone results in profilometer reading of 8 microinches

operator to unload a sleeve while one is being honed.

Tool in this application operates on a honing cycle as follows: hone is lowered into work in a collapsed position. Rotation and reciprocation of spindle is started. At bottom of first stroke, hone automatically expands to a light pressure and is run for approximately 25 strokes to remove stock to base metal before the normal working pressure cuts in and remains until the electrical timing device, set at a predetermined time cycle, collapses tool and releases line pressure, causing hone to be automatically withdrawn from work.

Aids Correlation of Data

It may safely be predicted that using new gaging equipment will aid correlation of data to show how surface finish is related to performance and operating factors in internal combustion engines, bearings and other sliding surfaces.

Already it is possible to maintain in regular production surface finishes with running average of height of irregularities held uniformly less than 5 microinches for engine cylinder bores, from 5 to 8 microinches on pistons, and from 1 to 2 microinches on some parts such as crankcase main bearings, crankshaft main and throw bearings, cam shafts, cam shaft main bearings, valve stems, piston pins, mushroom heads on valve tappets, wheel hub bearings, brake drums, brake linings, etc. This accomplishment immediately suggests importance of utilizing new equipment now available to restudy the whole subject of wear and bearing tolerances in internal combustion engines, and other equipment that utilize sliding metal-to-metal surfaces.

Welding Saves 60 Per Cent In Cost of Replacement

■ Knowledge of steel plate fabrication of machine parts by arc welding recently enabled John Mohr & Sons Co., Chicago, to save 60 per cent in cost of replacing a broken housing.

The housing, shown in Fig. 1, weighed 1540 pounds and was part of the idler roll housing on a vertical roll mill. The new part, fabricated by arc welding, is seen in Fig. 2. It weighed only 900 pounds. All materials used were new with the exception of bushings which were reclaimed from the broken housing.

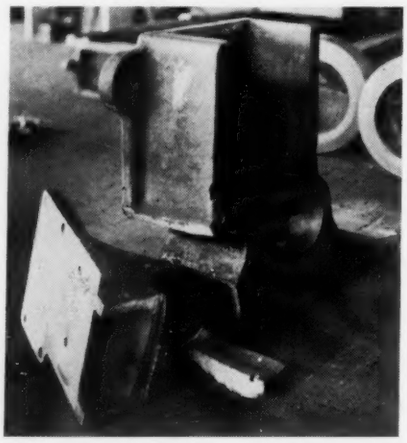


Fig. 1—Broken idler roll housing, weighing 1540 pounds, is replaced by welded construction shown in Fig. 2. Photos courtesy Lincoln Electric Co., Cleveland

Construction consists of one piece of steel for bottom plate, two pieces of round stock to house bushings

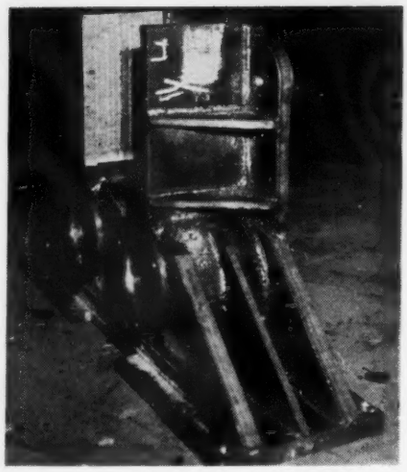


Fig. 2—Welded housing weighed 900 pounds and cost 40 per cent of replacement part

set into and welded to each of three supporting plates, three vertical plates welded to the face plate and to the bushing containers, two triangularly shaped gusset plates between and welded to face plate and verticals. Welded with the shielded arc, this provides an idler roll housing with twice the strength and at less than half the cost of replacement, according to the chief engineer.

It is reported that shortly after the welded steel part was put in service the gear on the driven roll broke. With the experience gained on the housing a gear was fabricated by arc welding.

New England Business Listed in New Directory

■ *Directory of New England Manufacturers*, 1939 edition; published with co-operation of New England council; supplied by STEEL, Cleveland, until Sept. 1 for $15, after that date $20; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.1.

This volume is a complete, comprehensive reference book to New England industry. In the 1939 revision more than 2000 new concerns are listed and more than 10,000 changes in personnel. It presents names of president, treasurer, sales and advertising managers, purchasing agent, number of employes and products manufactured. It also shows locations of plants and branch offices and capitalization of firms.

The second section gives classification of the same concerns by state and city as an aid in routing salesmen. In the third section all products are listed alphabetically, with names and addresses of manufacturers producing them. A brand name section is included. The volume will be available Sept. 1.

Time Saver

■ **Attempting to minimize all lost time in the open hearth department of its Lackawanna plant, Bethlehem Steel Co., Bethlehem, Pa., has installed this pneumatic tube to convey reports from laboratories to the open hearth**

Improved Annealing Covers for Tin Plate

■ NOTEWORTHY improvements have been incorporated in two recently completed installations of horizontal radiant tube, gas fired, annealing covers. These increase the tonnage capacity per cover and permit faster and more uniform heating and cooling.

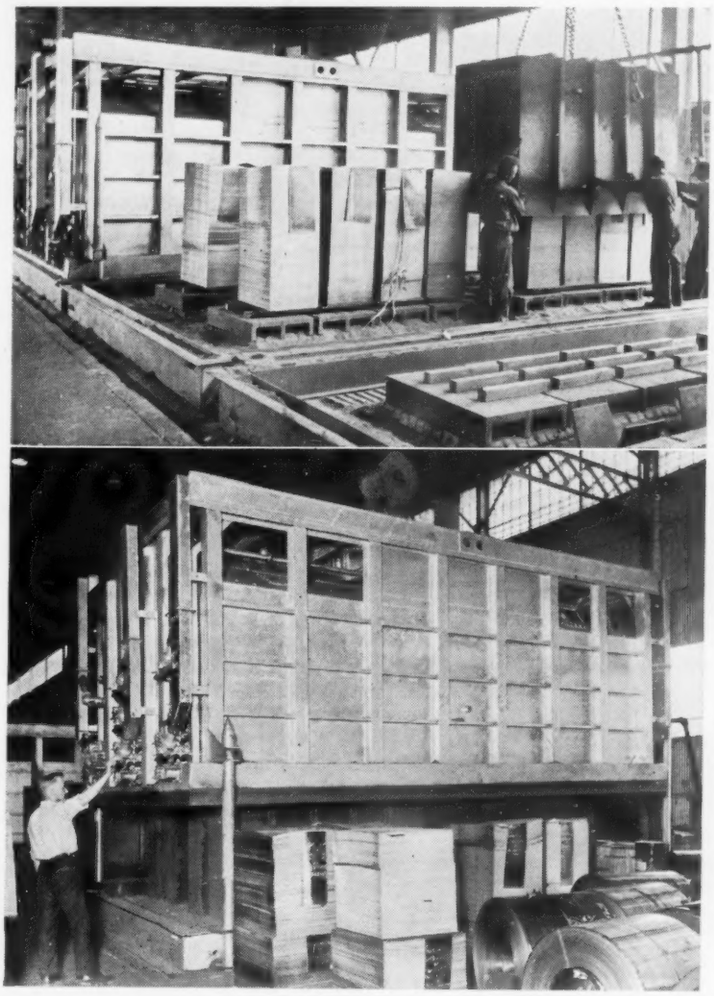
One of these installations comprises 16 covers at an Eastern tin mill where they are engaged in annealing cold reduced strip steel in coils prior to the shearing and sizing operation. Instead of the usual two banks of heating elements, each of these covers has three rows, comprising a center row in addition to the two side rows. By this arrangement it is possible to heat two parallel rows of coils instead of a single row as formerly.

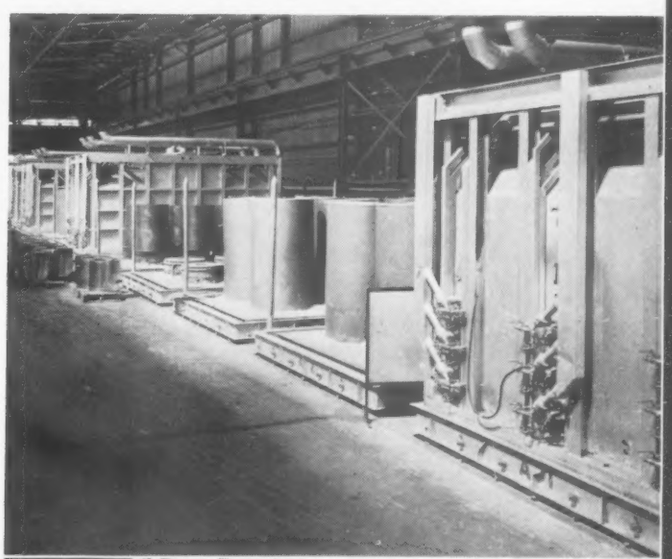
Each cover has a single exhaust fan which entrains the gas for combustion and exhausts the products of combustion. It replaces the individual exhausters formerly located at the end of each tube.

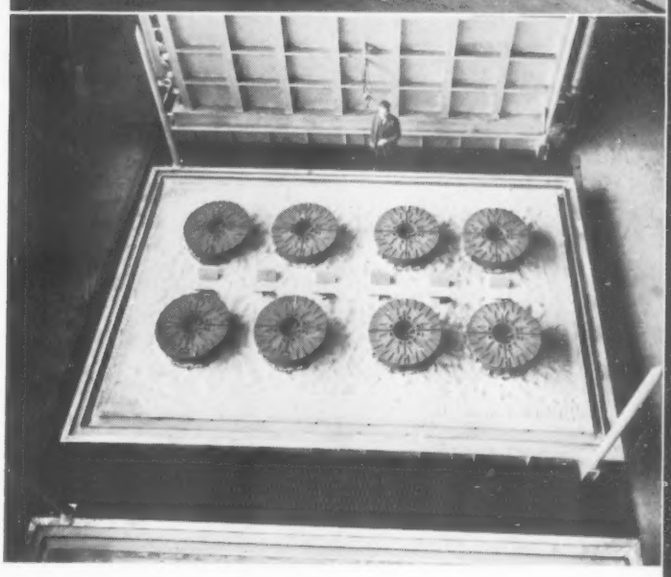
Coils are placed on the coil bases and inner covers are placed over them, in sand seals in the bases. Each coil base is equipped with a recirculating fan and is cored to admit protective atmosphere gas into the inner cover. After all the coils have been covered, the outer cover is placed in its sand seal and the burners lighted. At the same time the recirculating fans are set in motion.

The radiant heat energy from the heating elements is picked up, as it comes through the inner covers, by the current of protective atmosphere gas which is set up by the fans, thus resulting in fast and uniform distribution of the heat. After the coils have been brought to annealing tem-

(*Please turn to Page* 56)





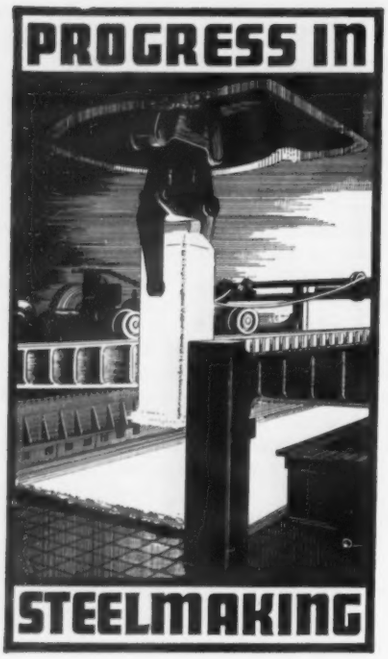


Above, new covers for annealing sheared strip for tinning have capacity for annealing 16 stacks in two rows of eight each. This view shows an inner cover being lowered over stacks

Side view of annealing cover for sheared strip. Stack awaiting annealing operation is shown in foreground. Coils shown are cut into sheets before annealing

These new horizontal radiant tube, gas-fired annealing covers, top right, anneal cold reduced strip at the rate of 16 coils per charge. Coils are stacked 2-high on eight coil bases arranged in two rows of four each. As shown at right, there are three rows of radiant tubes

As shown at lower right, recirculating fans are located in the center of each individual coil base



Burden Material

Difficulties encountered in smelting magnetite ores, when studied in laboratory setup duplicating furnace operation, are traced to incomplete reduction of sinter

Part I

By J. T. WHITING
Vice President
Alan Wood Steel Co.
Conshohocken, Pa.

■ WHEN EASTERN Pennsylvania was center of United States pig iron production much difficulty was encountered in smelting native magnetite ores. As smelting progressed, improvements were made but still smelting magnetite ores presented trouble.

Early in 1932, both blast furnaces of Alan Wood Steel Co. were idle. November of that year, No. 2 furnace was put in operation and afforded my first opportunity to observe operation and results obtained on magnetite ores. Compared with Lake ores of considerably lower iron content, magnetite sinter of 60 per cent iron content seemed to be desirable, and better results than with leaner ores were expected.

Fig. 1 illustrates results obtained on Alan Wood No. 3 blast furnace, over a period during which percentage of magnetite in the burden was materially increased. It shows that as percentage of magnetite increased, coke per ton of iron increased to a marked degree. Also it was difficult to make foundry iron with a silicon content near 3 per cent. Top heats and flue dust production were much higher than desirable.

Throughout 1934 there was available for sintering a small percentage of foreign hematite, the supply of which was exhausted in September of that year. Upon starting up in April 1935, sinter mix was made up of New Jersey magnetites, namely Scrub Oaks and Washington ores.

Advisability of a change in the sintering practice was immediately apparent, both from appearance of sinter and from slow rate of sintering process. Sinter was tough and hard, showing a considerable amount of fused surface. Speed of sintering machines decreased to about 30 inches per minute, whereas with a percentage of hematite in the mix, a speed of 55 to 56 inches per minute had been attainable. Next indication of trouble was evidenced by coke increase per ton of iron, top heats and flue dust production. These detrimental effects became more pronounced until results were so poor that it was impractical to continue operation on this material.

Connection Obvious

It is obvious there was a direct connection between magnetite ores in the burden and coke required to produce a ton of iron. However composition of these magnetites showed little to account for wide difference in coke per ton resulting from their use. A comparison of the chemical composition of Scrub Oaks ore, which refused to reduce economically, with a number of proven Lake ores, did not indicate any abnormal variations.

Alan Wood's Scrub Oaks ore, which is typical of many of the New Jersey magnetites, show chemical composition given in Table I.

Since roughly 50 per cent of total carbon is used effectively in reducing ore, a blast furnace on magnetite burden should make iron at somewhere near 1400 pounds of coke per ton of iron, assuming a coke analyzing 90 to 92 per cent of fixed carbon. High coke figures mean either furnace is not running at desired 50 per cent reduction efficiency, or that iron oxide is not being reduced by theoretical amount of carbon. Beginning in 1932, both of these angles were examined.

An analysis of the blast furnace gases showed definitely that the

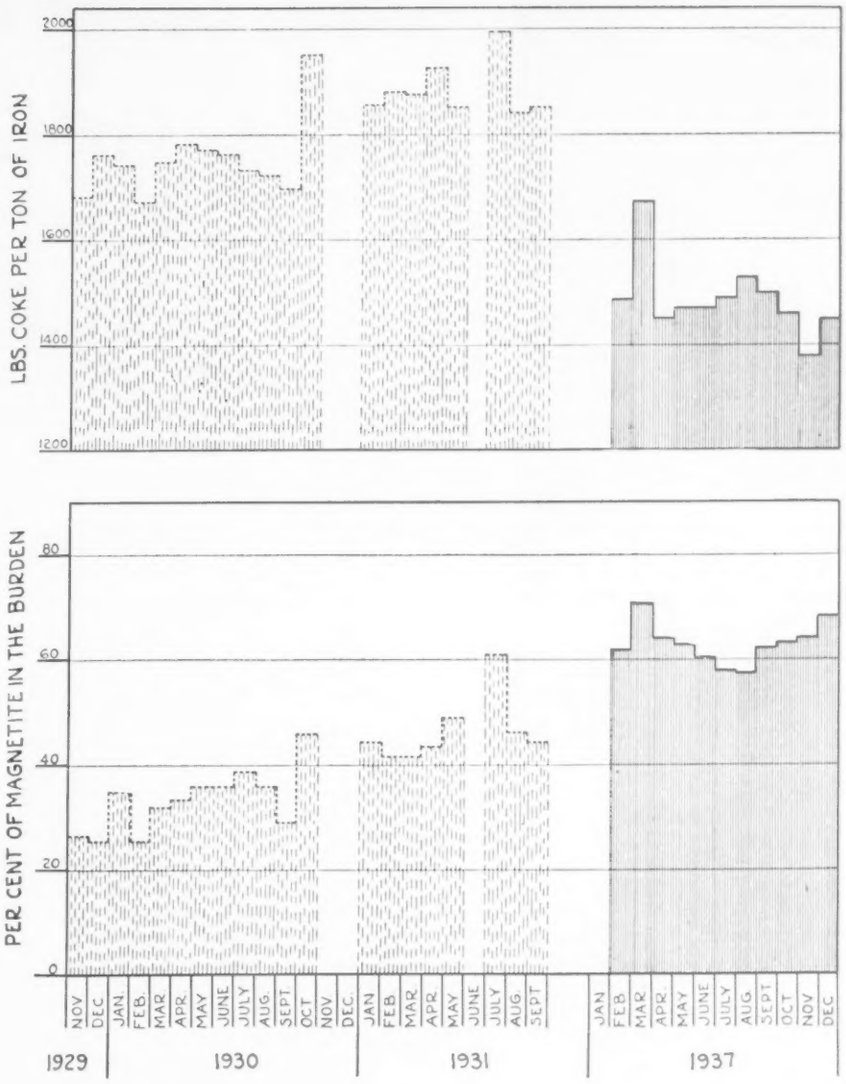
Table I.

Ore Analysis

	Before Concentration Per Cent	As Concentrated in 1931 Per Cent	As Concentrated in 1937 Per Cent
Iron	35.0	60.52	66.50
Manganese	0.05	0.03	0.03
Phosphorus	0.052	0.049	0.040
Sulphur	0.010	0.010	0.010
Chromium	0.01	Tr.	Tr.
Copper	Nil	Nil	Nil
Arsenic	Nil	Nil	Nil
Silicon Oxide	45.00	13.90	5.60
Aluminum Oxide	4.50	1.27	2.32
Calcium Oxide	0.75	0.49	0.24
Magnesium Oxide	0.57	0.27	0.12
Titanium Oxide	...	0.59	0.35

Abstract from paper read at meeting of American Iron and Steel Institute, at New York, May 26, 1938.

Fig. 1—Relation between coke consumption and percentage of magnetite in burden both before and after investigation described here



furnace was not running at anywhere near normal efficiency. An abnormally high CO—CO_2 ratio undoubtedly was caused by failure of ascending furnace gases to react properly with iron oxides in descending column of stock, the result of severely localized channeling of rising gases or physical condition of oxides which interfered with their reduction by the CO content of the gas.

While evidence pointed toward the latter, first efforts were in method of stock filling and preparation. Changes in filling varied from layer filling to mixed filling with various sized coke units, but those changes failed to show any significant improvement. Controlling the size of the coke helped some. Sinter was screened into three different sizes and charged separately which appeared beneficial. Crushing of the sinter was beneficial, probably since such crushing permitted exposing more surface to reducing gases. However, results were still unsatisfactory.

Calorimeter Used

First step in examining sinter was to determine amount of heat required to reduce the iron oxide to metallic iron, investigations being made on a bomb calorimeter on basis of a thermit reaction. Total oxygen in specimen having been determined, sufficient aluminum powder was thoroughly mixed into sample to combine with all the oxygen; an ignition compound designed which would set off the reaction and which would give a uniform blank; and the heat of reaction determined. After a number of experiments on pure Fe_2O_3 to determine accuracy of the method, determinations made on crushed samples of sinter checked within laboratory error the theoretical heat of formation or reduction of Fe_3O_4. These laboratory tests indicated no abnormal values.

A laboratory furnace designed to parallel as closely as possible upper portion of a blast furnace was constructed, the temperature of which was controlled by a platinum, platinum-rhodium thermocouple in furnace tube. Experimental gas reducing medium was actual blast furnace gas, collected in a 3000-cubic foot holder and exhausted by water pressure. Gas was passed through a precombustion furnace, cleaned, dried in sulphuric acid and all CO_2 removed in KOH solution followed by an ascarite tower. This CO-N gas was passed over specimens in furnace at predetermined temperature; resulting CO_2 created by reduction of iron oxides was collected in ascarite and weighed at

(*Please turn to Page* 56)

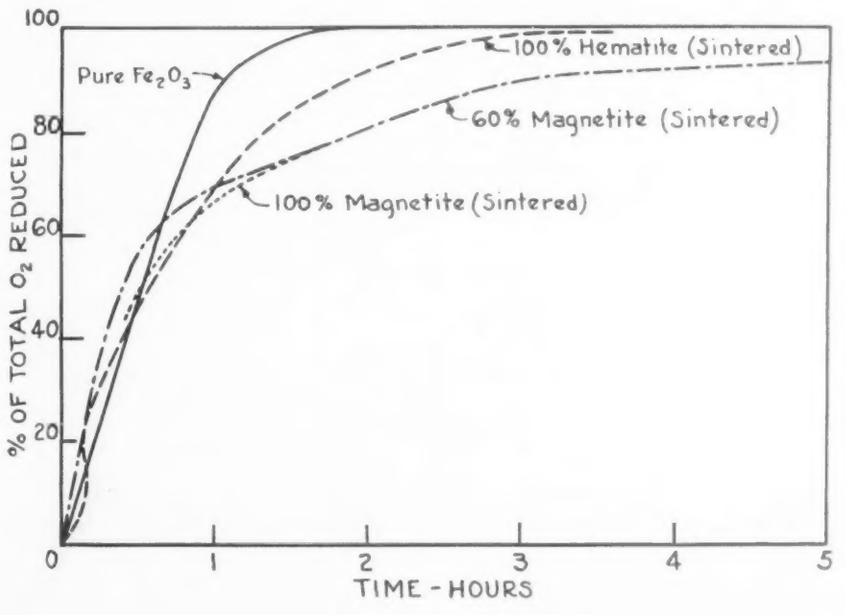
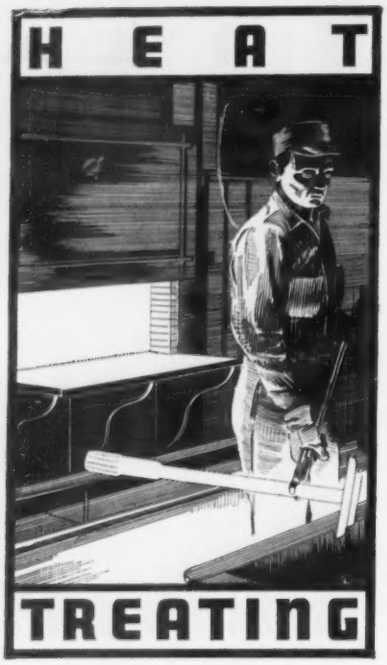


Fig. 2—Rate of reducibility in CO gas at 1500 degrees Fahr.



Modulating Control

Rotary-retort gas-fired furnaces have the thermocouples placed inside retort, thus providing more direct and accurate control. Temperature control utilizes three stages

By J. B. NEALEY
American Gas Association

■ONE PHASE of heat treatment that has come in for its share of advancement is that of temperature control of the furnace employed, resulting in development of a modulating type of control that is very sensitive and most effective.

When used with the retort type gas furnace, the thermocouple is placed inside the retort for the first time in the history of this type of furnace. One of these installations is part of the heat treating equipment at the new and modern plant of Thompson-Bremer & Co., Chicago.

A new lock washer known as Everlock, with offsets or tongues all around the edge, is made here. Each tongue is bent slightly on opposite edges in opposite directions to produce positive locking combined with powerful spring tension. Vibration cannot jar these washers loose and only a wrench will release them. Special multi-impression dies in standard presses are used to stamp them out. High-carbon strip steel, S. A. E. 1065, is fed to these presses from coils. From two and a half to three million washers are made here daily. Washers vary in thickness from 0.010 to 0.150-inch.

Quality of these washers is wholly dependent upon the heat treatment they receive. They must be hard enough so tongue edges will bite into the steel. On the other hand, they must be drawn back sufficiently to preserve a certain amount of springiness. This is accomplished by heating the washers at 1425 to 1450 degrees Fahr. for 7 to 17 minutes, depending upon thickness of steel as well as type of washer. Then they are quenched in oil and drawn for 50 to 80 minutes at 680 to 760 degrees Fahr.

One hardening and two drawing furnaces, all gas-fired, are used. These furnaces are the rotary-retort type. Hardening furnace is continuous and the other two are batch-tilting type. Each consists of a sheet-steel, refractory-lined shell in which the gas burners are located. Inside the shell is an alloy steel retort rotated by a motor.

The high heat furnace is about 6 feet long with a 3-foot diameter. Mounted on one side are a number of gas burners in one long row. Retort has a revolving charging drum on one end. Retort discharges into a cylindrical quench tank, 4 feet in diameter, through a chute which serves as an air seal. Another tank, fitted with a coil around which cold water circulates, is used for cooling. The oil is pumped continuously between the two tanks keeping it at a low temperature.

Basket Catches Work

A basket is placed in the quench to catch the work which is subsequently removed by a hand hoist. As the basket is perforated, the washers are allowed to drain and then the remaining oil is removed in a centrifuge.

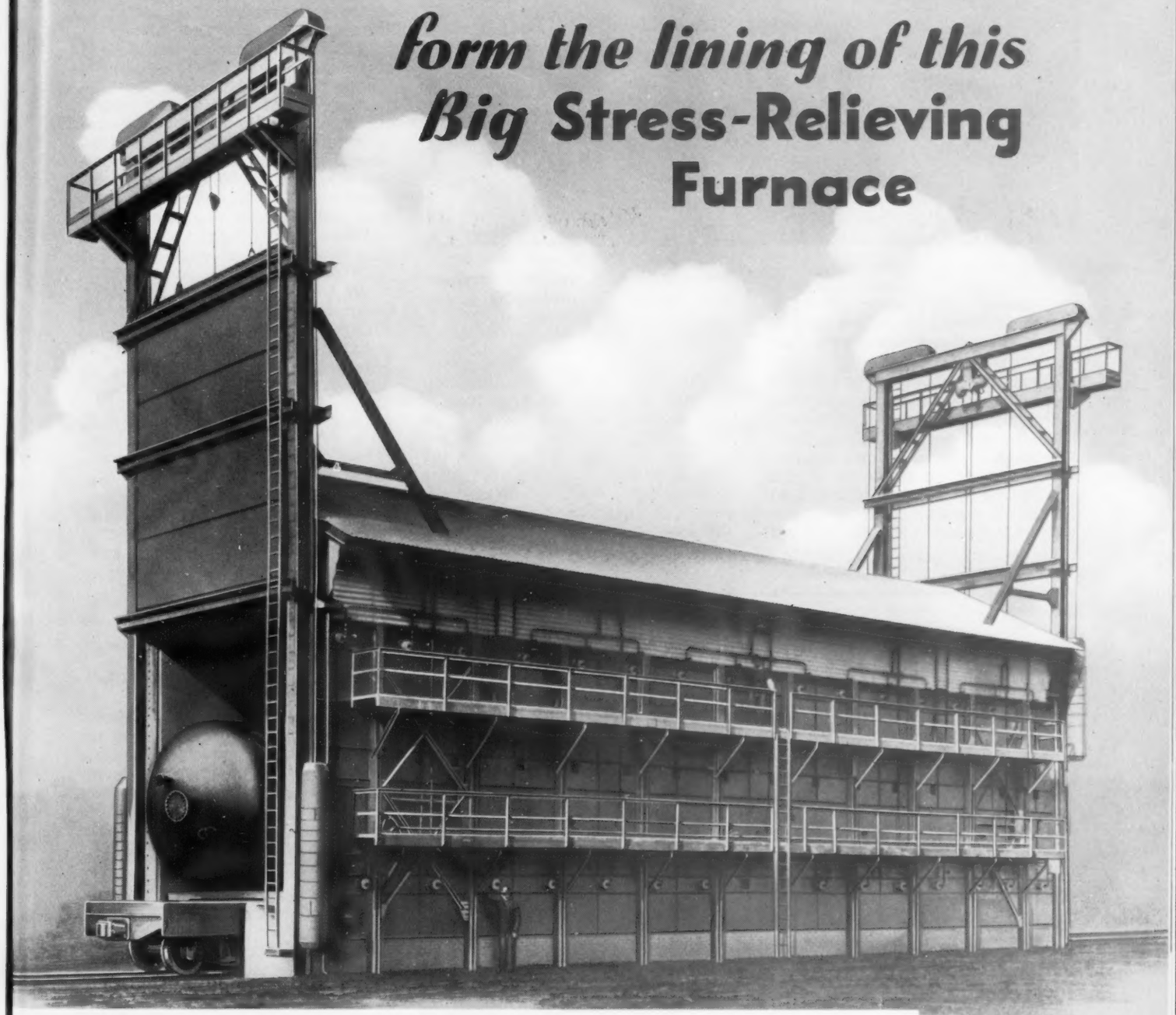
Draw furnaces are the batch-tilting type, 2½ feet in diameter by 4½ feet in length. Each is heated by a single gas burner firing into a combustion space between the furnace shell and retort. Air at one-pound pressure from a blower is used to entrain gas that has been dropped to zero pressure and this mixture is fed to the burners. For the first time, the controller thermo-

Heat-treating equipment shown handles 200 to 300 pounds of lock washers per hour. One operator takes care of the work. Hardening is continuous in furnace at right, others are batch tilting type

Nearly 3 Carloads of

B & W INSULATING FIREBRICK

form the lining of this Big Stress-Relieving Furnace



The Sun Shipbuilding & Dry Dock Co., Chester, Pa. stress-relieves welded pressure vessels in this furnace, which is one of the largest of its kind ever built. It has been in service more than six years; and its high thermal efficiency is due in major part to the use of over 80,000 B&W Insulating Firebrick.

Technical Data on Request
Bulletin R-2-F

THE BABCOCK & WILCOX COMPANY
REFRACTORIES DIVISION
19 RECTOR STREET NEW YORK, N. Y.

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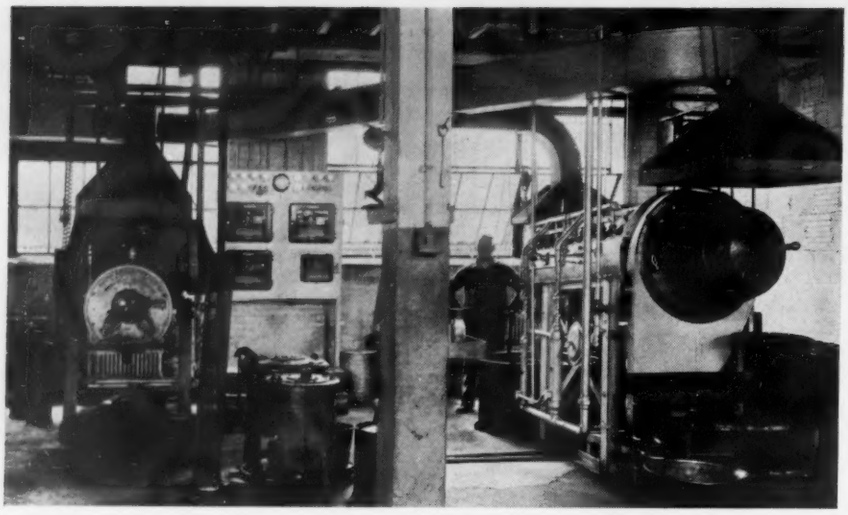


These automatic gas-fired furnaces have control thermocouples placed inside the retorts

couples are placed inside the retorts so a more direct and therefore better control over the retort temperature is obtained.

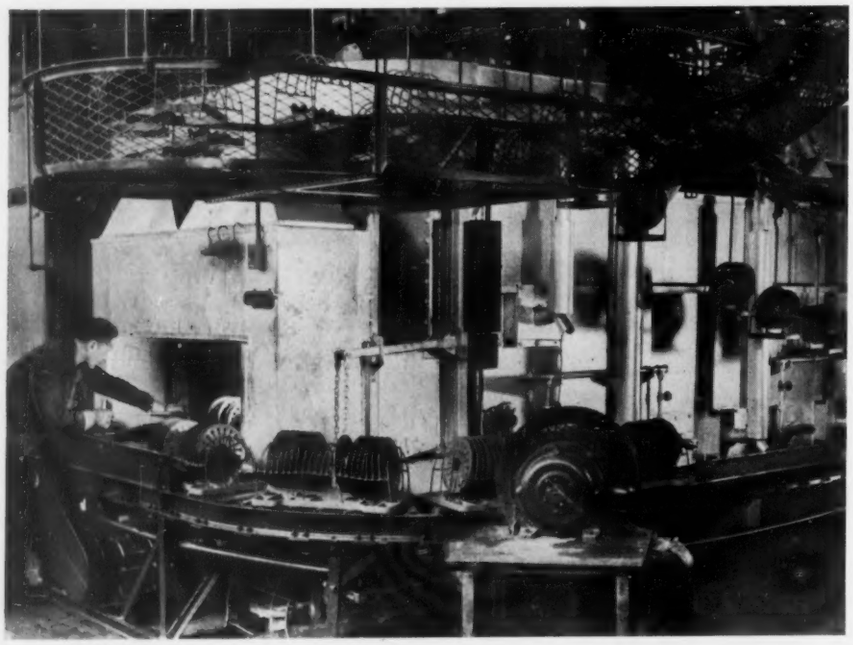
Modulating temperature controllers maintain temperatures within 2 degrees it is claimed. This control employs the principle of varying thermal expansion and contraction between two metal tubes, one within the other and fastened together at one end. A valve in the air line is threaded into the free end of the operating tube and this tube is made to expand by heat from a resistance coil wound about it. This elongation pushes the valve toward the seat thereby cutting down the flow of combustible mixture. A potentiometer, actuated by the thermocouple, regulates the amount of heat developed in the resistance and thus controls elongation of the expanding tube. Circuit is adjusted by a rheostat or a series of lamp resistances.

Full burner capacity is utilized to bring the furnace up to temperature. When about 30 degrees Fahr. below the desired temperature, a percentage of the fuel flow is shut off by the first stage operation of the expanding tube and valve.

Within 5 degrees of the desired temperature, fuel flow is reduced again through the second stage movement. At the desired temperature, a third movement of the valve cuts fuel flow to the minimum allowed. Each bank of resistance lights is mounted on a control board, just above the corresponding recording potentiometer, so temperature conditions are readily visible. This control has a wide range of usefulness extending from low-heat furnaces to high-temperature furnaces.

After drawing, the washers are dumped into a wire basket which is set in a cooler. Quick cooling is accomplished by pulling cold air through them with a fan. They are finally tumbled in sawdust with a little oil added and tested for hardness in a Rockwell machine. The hardness never varies more than one point. For instance, if a hardness of 46 is desired, the heat treatment is so well controlled that any variation will be between 45 and 47. This is said to be one of the most effective heat-treating installations used for this type of work.

Conveyed via Baskets



■ **Special baskets providing a minimum of contact with the work are used in connection with heat treating flat disks for Chevrolet clutch assemblies. Here the baskets are being charged into a controlled atmosphere electric furnace. After the heat treating operation, the disks are dished, normalized and shotblast cleaned. Note smaller baskets on overhead monorail conveyor for transferring clutch disks to succeeding operations**

♦

New Committee to Rationalize Radiography

■ In recent years, use of X-rays and radium for inspection of important engineering structures has increased considerably. This is the case especially where failure would result in heavy economic losses, or where human safety is involved.

Recognizing this, the American Society for Testing Materials recently organized committee E-7 on radiographic testing, fundamental purpose of which will be to place industrial use of radiography on a rational common-sense basis. Following usual procedure of the society, committee membership includes producers of articles subject to X-ray inspection, users of products subjected to this inspection, makers of X-ray apparatus and radium capsules, and research workers.

At present, the group is engaged in studies preliminary to development of standards and recommended practices covering acceptability and applicability of radiographic examination. It also is conducting research in an effort to improve sensitivity and reliability of this method of inspection.

Sprockets Are Welded And Flame Hardened

■ PRODUCTION of sprocket wheels for a new model crawler tractor at Cleveland Tractor Co., Cleveland, involves a design which facilitates speedy fabrication as well as special tools to aid the work.

Tractor has 24-inch clearance, necessitating use of 31-inch sprockets. Sprocket teeth are heat treated to reduce abrasion to minimum. Since it is not practical to heat treat a 31-inch sprocket, rim of this unit

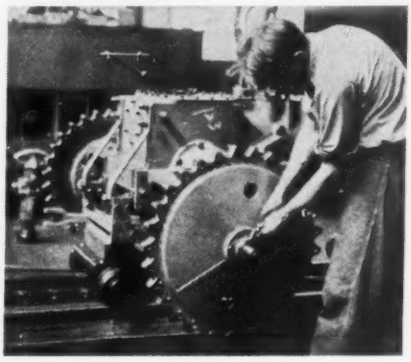


Fig. 1—Completed spockets being assembled on tractor drive unit

is made in sections which are welded together and riveted to side steel disks as shown in Fig. 1. Disks then are welded to hub. Four ribs on the outside disk are welded in place.

Rim in Six Sections

Rim is composed of six sections. Five sections have five teeth each and remaining section has four teeth. These sections are drop forged SAE 1045 fine-grain steel. First operation in making sprockets is hardening the teeth, using apparatus shown in Fig. 2. Fuel used is natural gas and flame ribbons play directly on the teeth. Heating period is 4½ minutes, the timing being electrically controlled.

Heat treated part then goes to the quenching apparatus shown in Fig. 3. The heated part sets in a cradle with the hot teeth downward and in this position water jets play on the part for a predetermined period electrically controlled. By using steel of a specific composition in conjunction with automatic heating and cooling cycles, all parts receive exactly the same heat treatment. Tooth faces are hardened for wear resistance. Webs are fully machinable.

Heat treated segments are assembled in the welding fixture shown in Fig. 4, where teeth bear against locating members held in place by hand nuts. Straddle clamps also bear against the inside portion of each segment, forcing it outward and against locating stops. Nut at center screws down on a tapered member and this forces all the straddle clamps outward simultaneously and securely positions the segments. Fixture then is swung 90 degrees to a vertical position. As entire fixture rotates about a central hub, joints between sections are positioned easily for down welds. Since location is accurately made from the teeth, sprocket rim will run in true circle. No machining

Fig. 2—Flame-hardening equipment produces long-wearing surface on sprocket teeth

is done on the teeth after they are hardened.

Side disks assemble against finished portions on inside of rim at which point the rim is soft so it can be machined readily. Rim is located by its teeth on a special faceplate fixture on a lathe. In this position, two hook tools mounted on the tool slide turn the seats to accommodate the side disks. Since

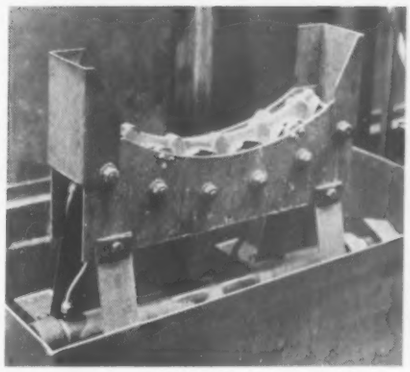


Fig. 3—Setup which quenches teeth. Automatic timing produces uniform results

work is located from the teeth, turned surfaces will be concentric with the teeth. This is essential if rim of finished sprocket is to rotate in a true circle.

Side disks are blanked and drawn from ⅛-inch sheet steel. They are firmly fastened to the rim by riveting. The 29 rivet holes, 25/64-inch in diameter, are multiple drilled in two settings. Work is held in a special jig and is located from the seat previously turned. First setting drills 15 holes, the second setting 14 holes.

Sprockets produced are substantial, comparatively light in weight, yet with sufficient strength to withstand severe usage. Fig. 1 reveals tractor in process of assembly. The machinist is setting the sprocket in place. Tractor rests on a dolly and a chain moves it down the assembly line.

Gaskets Metallized

■ Goetze Gasket & Packing Co. Inc., New Brunswick, N. J., has a new line of corrugated metal-asbestos gaskets treated with a special metallic compound which adds to the gasket's resistance to heat, pressure, moisture and corrosion, it is claimed.

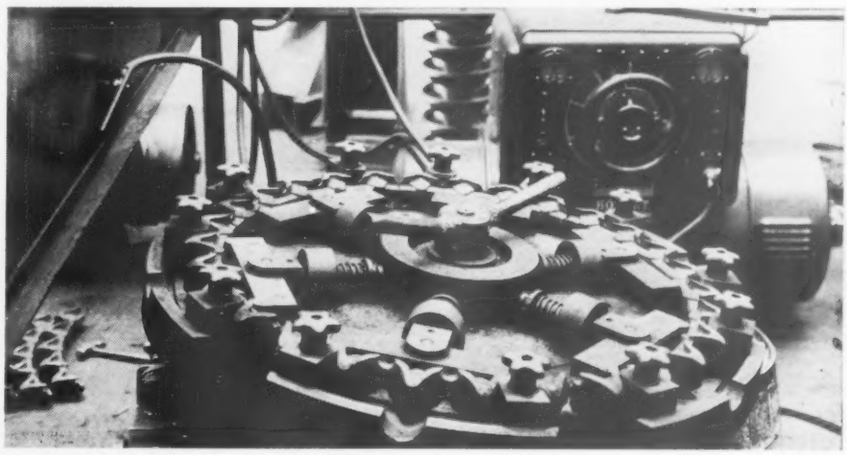
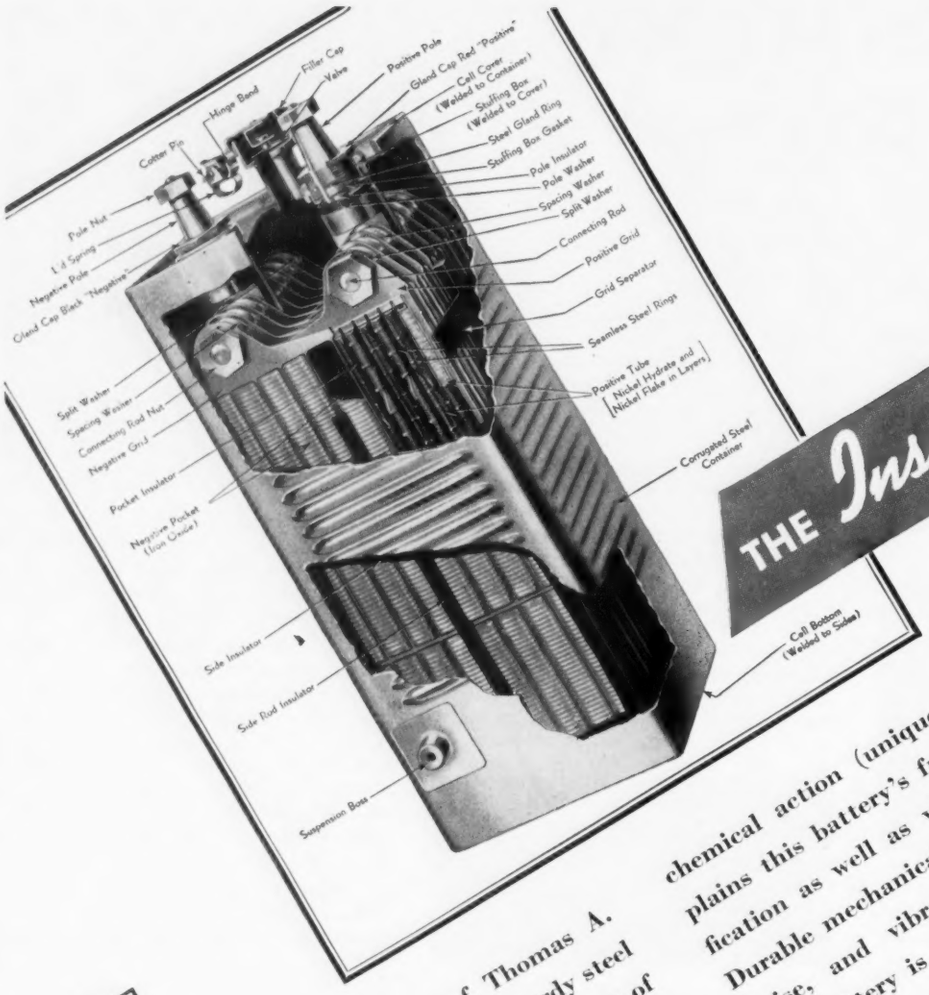


Fig. 4—Sprocket tooth segments are welded in a continuous circle in this fixture. Nut in center actuates tapered section which simultaneously clamps all segment sections



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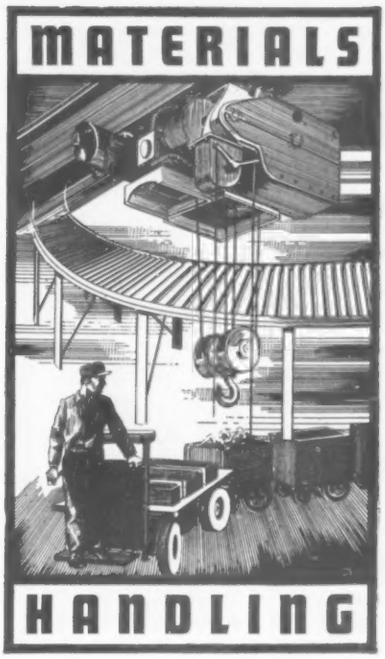


Continuous Strip Mill

Many mobile units are used in addition to equipment built into mill. This article describes handling operations up to the sheet normalizing furnaces

Part I

■ PROBLEM of materials handling in Jones & Laughlin Steel Corp.'s new 96-inch strip mill, Pittsburgh, described in STEEL, Dec. 20, 1937, is largely a matter of obtaining proper co-ordination so there may be smooth flow through the many separate operations.

Obviously, to achieve best results in a continuous operation involving rapid movements of large tonnages in a plant covering more than 23 acres, all bottlenecks must be eliminated, or minimized. To accomplish this, requirements for physical distribution were given attention in the original design, the engineers literally building the mill around its handling system. Thus backtracking is eliminated as far as possible.

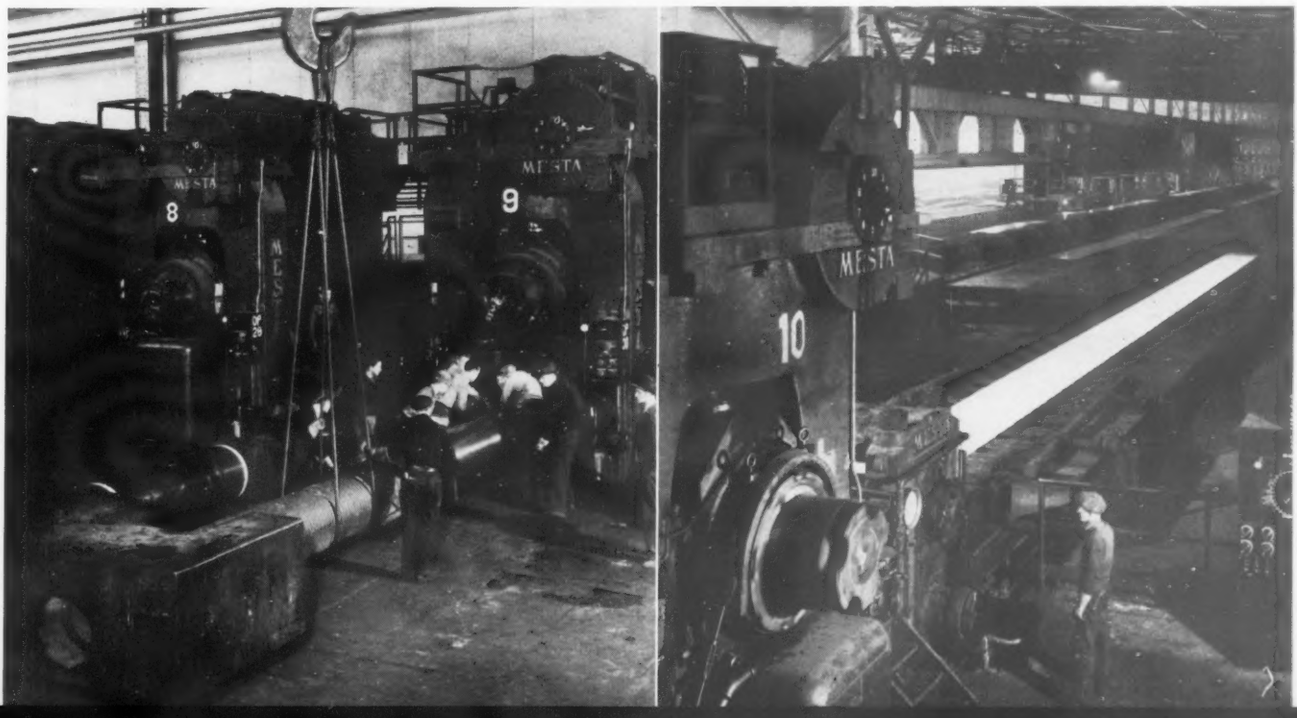
Equipment for materials handling may be divided roughly into two groups, one built into the mill itself and the other being mobile equipment. The former consists of 2516 feet of roller table with motor-driven rollers, 830 feet of gear-driven roller tables, 219 feet of endless-chain conveyors, two coilers, two sheet stackers, cradles, kick-off tables and 1500 feet of gravity roller conveyors.

Mobile units include 24 overhead electric traveling cranes ranging in capacities from 15 to 75 tons and equipped with auxiliary hoists and lifting magnet controls; 7 electric industrial trucks, ram type, of various sizes; 3 tractors; 51 trailers; and one carrier-tiering machine.

Products of this mill include hot and cold-rolled strip in coils and cut lengths, hot and cold rolled sheets, light plates, flat galvanized sheets as well as galvanized roofing and siding. Starting in the continuous hot mill, the sheets move through various departments and finishing operations depending upon the customer's specifications. Slabs for use in the hot strip mill are rolled on the corporation's new 44-inch blooming mill situated across the Monongahela river at the South Side works.

Finished slabs weigh from 1½ to 5 tons each. An electric crane and thirty specially designed railroad gondola cars each of 100 tons capacity are used in handling slabs. These cars have been equipped with castings set 36 inches apart to support the hot slabs and with upright stakes to separate the piles. Car floors are covered with brick to pro-

Fig. 1 (Left)—One of two 75-ton cranes with 25-ton auxiliaries used to change rolls. Fig. 2. (Right)—Runout table carries hot plate leaving finishing stand at 1400 feet per minute



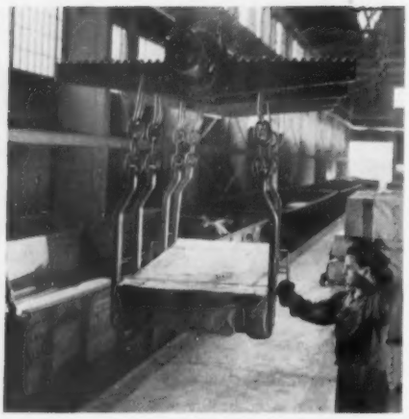


Fig. 5—This 10-ton lifter carries sheets in packs up to 30 inches deep, in widths of 24 to 84 inches and lengths up to 14 feet

tect the floor plates and the steel frames from the heat.

These special cars carry the slabs over a company bridge which crosses the river and connects the two plants. Material is delivered into slab storage building 100 x 650 feet. Two 25-ton overhead traveling cranes, each equipped with a 15-ton auxiliary hoist are used to unload cars, stock slabs and supply the magazine feeder which with furnace charging tables and pushers extends back into the slab storage area.

Fed Singly

Slabs are deposited five or six at a time in the magazine which feeds them singly onto the 112-foot roller table extending the width of the three furnaces. Slabs are charged by a double arm pusher at each furnace. As each slab is pushed into the furnace, another is discharged at the opposite end, 80 feet away. At this point, roller tables transport it to the first rolling operation. From the point where the slab leaves the furnace until it is coiled, it travels in a straight line approximately 875 feet in less than two minutes.

While handling through the hot mill is performed largely by built-in units, one important service is performed by mobile units. This is in changing mill rolls which weigh from 10 to 55 tons each. Frequent roll change is necessary to insure high surface quality in the finished product. Two 75-ton electric cranes are used. Each is equipped with a 25-ton auxiliary hoist and a roll-changing rig, the head of which counterbalances the weight of the roll. Fig. 1 shows changing rolls with this equipment.

Changed Rapidly

Roll changes must be made rapidly to maintain a high average of production so complete sets of rolls for both the roughing and finishing train are stored conveniently in specially designed racks on the hot mill floor. After removing the rolls from the mill, the crane carries them to a special transfer car which transports several rolls at a time to the roll finishing shop. Here they are picked up by an electric crane of 65 tons capacity equipped with a 10-ton auxiliary hoist, and delivered to the roll grinding machines which restore the high finish.

Hot mill operation is substantially the same regardless of whether the ultimate product is plate, strip or sheet. Each product, however, is finished by a different sequence of processes. Hence, there is a greater diversification of handling methods and equipment in finishing departments.

If plates are being rolled, they are transferred from the runout table to secondary tables paralleling it. This movement is accomplished by a chain-type transfer, 250 feet wide which transports the plate to the first of these tables, a unit approximately 650 feet long. After cutting to length, a second chain-type transfer, 98 feet wide, carries the plate to a second cooling table, approximately 625 feet long, from whence a third conveyor, also 98 feet wide, takes it to the final table along which it moves slowly to the kick-off and stacking racks in the plate finishing department.

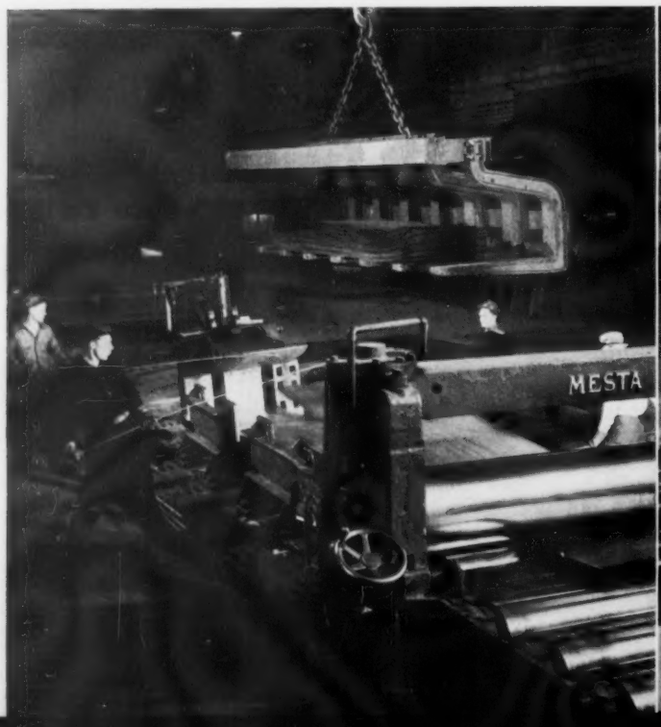
Two 15-ton cranes are used to transport stacked plates from racks to cooling bays and later, when cold, to the various finishing operations. These cranes also are used in the plate shipping department where orders are checked and weighed prior to shipment.

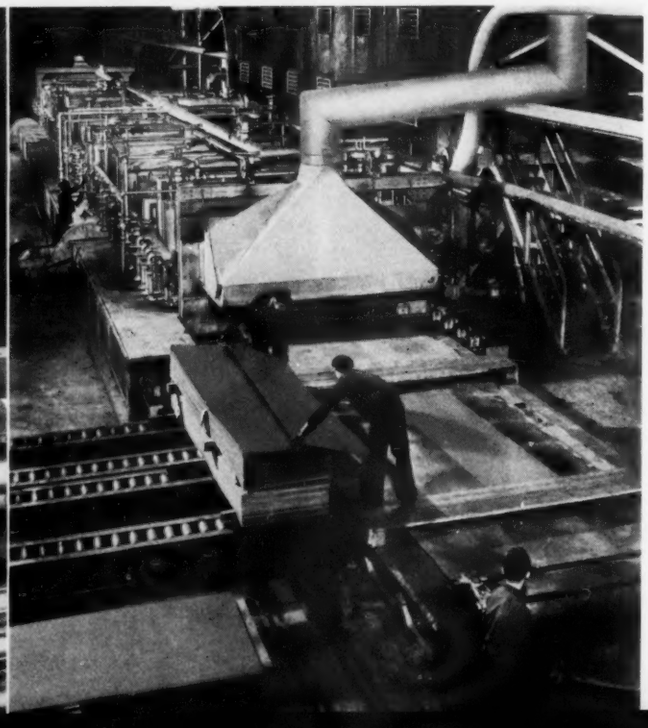
There are 867 electric motors in the roller tables and coilers in the hot mill. From last finishing stand to coilers, a distance of 370 feet, each roll is driven by an individual motor with a range of 2½ to 7½ horsepower. Fig. 2 shows this runout table. From coiler to end piler, a distance of 250 feet, a motor is used for every two rollers which are connected by a pinion gear. Motors in this table and cooling tables have a range of ½ to 1½ horsepower.

When material to be finished as sheets in cut lengths comes from the hot mill, it is cut by a flying shear and carried rapidly down a runout table to either the first piler, located approximately 370 feet from the last stand, or to a second piler, 250 feet beyond and used for heavier sheets.

(*Please turn to Page* 66)

Fig. 3. (Left)—Special pack lifter used with crane to move cut sheets from stacker to cooling skids. Fig. 4. (Right)—Sheet pack is deposited on a roller table for manual charging onto disc conveyor carrying sheets through furnace

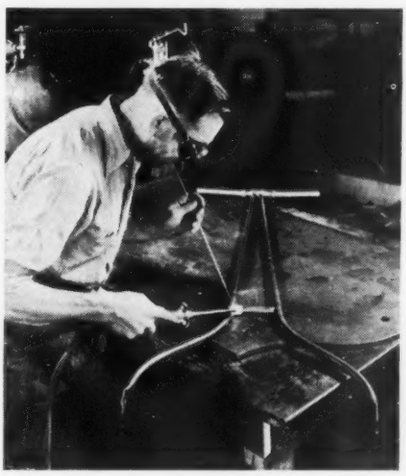




Production Welding of Lawn Mower Handles

■ ALTHOUGH lawn mower handles have been made of wood for many years, a progressive company recently conceived the idea of making lawn mower handles from tubular steel by welding, according to *Oxy-Acetylene Tips*, published by The Linde Air Products Co., New York. Tubular steel, welded into one permanent unit effects a considerable reduction in weight and produces a trim, smooth handle. Both of these factors are important in making the lawn mower easier to use. Also, welding provides jointless construction which eliminates maintenance and gives longer life to the handle.

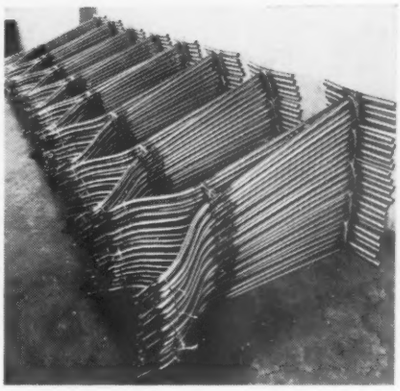
Tubing arrives at the plant in various sizes and standard lengths. These sizes are cut to special lengths and routed to the machines which bend, grind, punch and crimp the tubing. The handle grip is bent to correct curvature and turned in at



Finish welding a lawn mower handle. Parts have been tackwelded in position in a jig previous to this by another operator

the end. This eliminates any ragged edges and protects the hands of the ultimate user. Extension pieces are bent to curvature, ground at one end to fit the side of the handle grip and punched at the other end to be attached to the lawn mower body. The small section of tubing that spreads the extension pieces is ground at both ends to fit the sides of these extensions. The various parts then are sent to the welding department in lots of sufficient quantity to enable welding operators to work continuously.

In the welding department, a tack-



A stack of completed tubular steel lawn mower handles

welding operator places the parts which make up the handle assembly in a jig, tack-welds the various parts together and then places the assembly in a rack which is conveniently located for the three production welding operators.

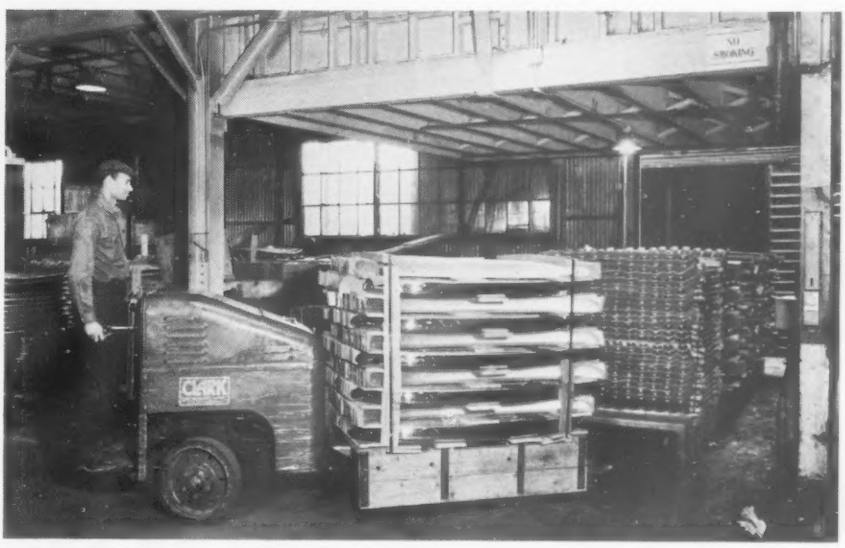
Only four welds are required in producing the handle assembly. A sheet metal blowpipe and suitable rod are used by the operator. No jigs are necessary in making the finished weld. Production time is further reduced by the fact that the welded joint has a smooth appearance and requires no subsequent grinding to finish it. During inspection, a rubber mallet is used to remove any twists or curves that the handle may have received during production. Engineering and production problems have been simplified by designing the product for welding, and production time and costs have been reduced through efficient organization of the work as outlined.

Rustproofing Improved

■ Parker Rust-Proof Co., Detroit, announces important improvements to increase efficiency and lower cost of parkerizing and bonderizing processes. Processing time has been reduced from 60 to 90 minutes to 30 minutes and operating temperatures from 210 down to 180 degrees Fahr., thus lowering heating costs.

Improved chemicals develop less sludge in the processing tank and produce a finer grained coating with a minimum buildup in fine threads, an important item in machine screw products finishing, where close tolerances must be maintained. Shorter processing time reduces size and cost of tanks required. This with lower heating requirements and faster operation, make possible important reduction in cost of installation and operation.

Truclift Spots Load on Shipping Dock



■ **For handling raw material, parts and finished product, U. S. Spring & Bumper Co., Los Angeles, recently installed in its enlarged plant a 3-ton, rear-wheel drive and four-wheel steer Truclift, manufactured by Clark Tructractor division of Clark Equipment Co., Battle Creek, Mich. Truclift is shown spotting steel strapped unit load of finished bumpers on shipping dock. Machine has a lifting range of 11 to 16 inches. It is gas-powered and has a speed range from 1 to 9 miles per hour**

STEEL'S

METAL SHOW ISSUE

October 10

1938

1938 METAL SHOW

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Jig Assembly

New method of assembling sheet metal products features speed and accuracy in fastening parts together, eliminates juggling parts into position, reduces fatigue

■ A RECENT development that already has made significant savings in assembly costs utilizes a system of jigs for assembling various metal panels and parts using the well-known Speed nut in conjunction with screws and bolts.

Seeking further reduction in assembly costs, engineers of the Tinnerman Stove & Range Co., Cleveland, have developed a method of holding the Speed nuts in a fixed position so they need not be held by hand while engaging the bolt.

This is accomplished by designing the assembly so it can be made on jigs such as illustrated in Fig. 1. This jig is constructed to the inside dimensions of the range or fabrication being assembled and is squared perfectly to assure alignment of all parts. Recesses or pockets are made in the jig, each recess holding a Speed nut in a fixed position opposite a bolt hole. The various panels forming the fabrication have holes punched in the top edge so the panel can be hung over the jig on pins fitting in these holes.

In operation the Speed nuts are first dropped into these pockets which are shaped to hold them in position as shown by the enlarged section of Fig. 1. Then all the various panels are placed on and around the jig where they are held in an alignment by engaging the vertical guide pins. All side pieces are placed on the jig at one time, the top piece placed over them. Bolts then are pushed through the holes into Speed nuts held in position by the pockets. Little rotation is required to set up bolts tightly due to zipping action of Speed nuts which can be engaged up to the locking position by merely forcing bolt down into Speed nut.

Operator now slips a tubular-nosed power screwdriver over one bolt head after another, turning the bolts up to proper tension almost instantly. An automatic release in the power screwdriver is set to give the proper tension in the assembly. This eliminates possibility of bolts being turned either too tightly or too loosely. Actual fastening time is less than ½ second per bolt.

Assembly Accurate

This method eliminates assembly of various pieces one by one as all pieces are assembled simultaneously and with great accuracy.

Another feature of Speed nut jig assembly is that it eliminates sag as shifting of bolts in panel holes is prevented entirely.

Already a number of gas range manufacturers have installed this system with excellent results and its use is being expanded to other plants as rapidly as it is possible to develop jigs and fixtures.

Fig. 1 shows the ease with which these fastening devices are dropped into the pockets of nut holders where they cannot turn. All nut holders are permanently fastened to the jigs in positions to correspond to bolt holes.

Fig. 2 shows how a jig is made to conform to inside dimensions of a range. This particular assembly

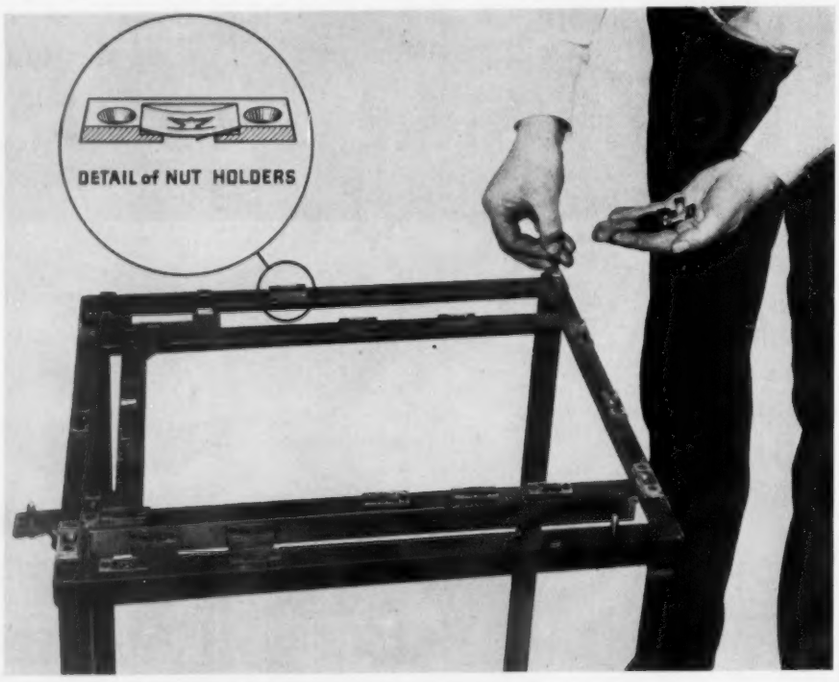


Fig. 1—This demonstrates how Speed nuts are dropped into pockets in the jig

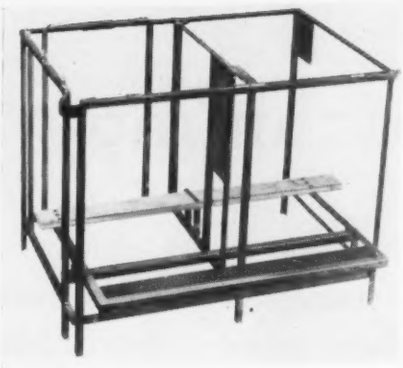


Fig. 2—Typical jig with nut holders mounted on top for Speed nut assembly. This includes pins for locating and assembling five sides and a partition

has four sides and a top as well as a partition inside, all of these parts being assembled at one time on this jig. As soon as bolts have been inserted in holes, a power screwdriver is utilized in locking up the assembly as shown in Fig. 3.

In Fig. 4 the completed assembly is being removed from the jig by simply treading lightly on a foot operated pivot bar which forces the assembled panels up and out of the jig. Now the frame is ready to receive burners, valves, thermostats and finally the outer finished trim.

As this method of jig assembly eliminates placing nuts by hand as well as holding the panels in position, it is possible for the workman to assemble a unit with much less effort. As there are not so many parts to handle and as no parts have to be held in position by hand, this system is welcomed by workmen.

Not only is this system used to assemble main bodies of ranges, but it also is being employed to facilitate assembly of broiler doors, compartment doors, etc. Jigs for these subassemblies utilize the same principle of operation. Speed nuts

Fig. 3—Power screwdriver sets up Speed nuts to exact tension at rate of ½ second per nut

are simply dropped into pockets of nut holders in a jig formed to fit the particular drawer or door being assembled.

One of the important advantages of this system is that bolts and nuts can be assembled in very tight locations with no extra effort on the part of the operator.

Present installations in manufacture of gas ranges have made it possible to shorten the assembly line, get all assembly parts in more perfect alignment, obtain just the right spring tension of fastening, eliminate cracking and chipping of porcelain enamel surfaces and to make the assembly work easier for

Fig. 4—Completely assembled frame is being removed from jig here by stepping on a pivot bar

the operators. All of these factors have materially reduced assembly costs. Also a better product results since the assembly withstands heavier stresses and is said to remain forever tight without chipping or cracking of the enamel.

New Welding Handbook Is Authoritative Work

■ *Welding Handbook, 1938 Edition;* imitation leather, 1200 pages, 8¾ x 6 inches; published by American Welding Society, New York; supplied by STEEL, Cleveland; for $6; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

This, the first edition of a handbook assembled by the American Welding society will meet the demand of long standing for practical, authoritative information in concise form on the subject of welding. More than a year and a half was required in its painstaking preparation and it was kept up-to-date to the time of printing. Covering every phase of welding, it represents the efforts of 90 authors and 237 reviewers.

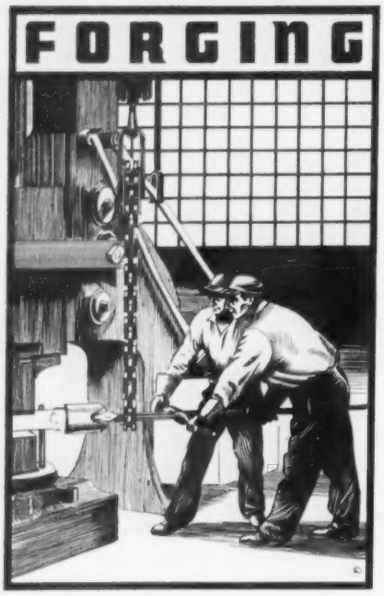
The volume covers, first, the fundamentals of the various processes; second, materials used and testing methods involved; and third, applications. This treatment of the broad subject of welding is supplemented by ample data on metal cutting and a number of processes allied to welding and cutting.

Aim was to insure that statements of fact should be accurate and recommendations authoritative. Outstanding authorities from those available in each field, therefore, were selected as authors for the respective chapters and at least five other authorities were invited to review each chapter. The desirability of impartial treatment was recognized by both authors and reviewers. The Handbook does not undertake to distinguish between processes or products that are patented and those that are not.

Economics of welding are reviewed in the preface. Chap. 1 presents a chart of welding processes and definitions of terms; Chap. 2, welding symbols and instructions for their use. Chap. 3 to 22, inclusive, deal with processes; Chaps. 23 to 33, inclusive, treat with materials and metallurgy. Testing is the subject matter of Chaps. 34 to 39, inclusive; and welding applications are discussed in Chaps. 40 to 59, inclusive. Chap. 60 is a critical digest of welding literature. Testing terms, physical constants and conversion tables make up Chap. 61. A comprehensive index completes the volume.

Forming Bulb Sockets

■ This progressive-die press operation in plant of Bowen Products Corp., Detroit, employed in forming brass lamp bulb sockets for use in automobile headlights. Blanks are shown at right in front of operator; three finished pieces are seen at the left. Blanks are fed in at right and moved automatically through six stations, and with each stroke of press a series of six forming operations is completed. Production averages 2000 pieces per hour



Pressure Machining

Cold forging under tremendous pressures is used here to produce parts comparable in accuracy of dimension and form to those machined from a solid piece of stock

■ REDESIGNING a number of parts for manufacture by the Coldflo process, Bowen Products Corp., Detroit, has been able to obtain a number of outstanding advantages, the most significant of which probably is the low costs involved. Also important are high strength and hardness, good grain flow, smooth surface finish and absence of scrap metal. This company has found that hundreds of parts can be produced economically by this process where conventional methods would entail prohibitive costs. Surplus metal is retained and cold metal is flowed under dies at tremendous pressures to obtain a product comparable to one machined from a bar.

Stimulates Research

Engineers of this company, in fact, have been so successful in redesigning parts for production by this method that sales of this type of product far exceed sales of their standard items. This has stimulated extensive research along lines of cold pressure machining. Present operations represent culmination of 40 years' work in manufacturing grease cups and oiling devices by pressed metal processes.

In general, the Coldflo process begins with a thick blank, usually from bar stock rather than sheet, which is flowed cold under extreme pressure to fill the contours and cavities of the die. In some cases a subsequent draw or forming operation is necessary. Fig. 2 shows typical parts processed by this method and Fig. 5 reveals steps in forming some of the more complicated shapes. Good grain flow, similar to that obtained in forged parts, is produced in cold flowing as is illustrated in macrographs, Fig. 4. These particular parts also have a hard cyanide case.

Conventional embossing, or coining, presses of the knuckle type are used. This type of equipment has been found especially satisfactory because of the pronounced "dwell" at bottom of the stroke, which holds the metal long enough for it to take a set after the flowing action has subsided. Obviously, dies used are of utmost importance. Great care must be exercised in their design and construction to obtain sufficient strength to withstand the high pressures involved. Proper proportions between overall dimensions of die and size of cavity must be worked out to prevent fracturing of die during operation. Fig. 1 shows a typical die. In this press, a pressure of 800 tons, 1,600,000 pounds, is concentrated on the small area covered by the shape of the large nut being cold formed.

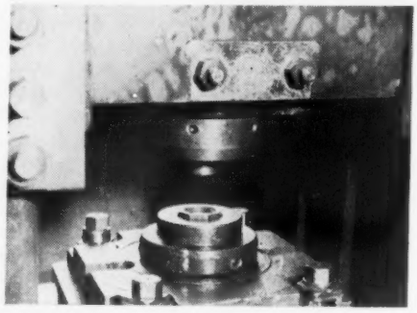


Fig. 1—Closeup of dies in 800-ton press used in making a 3-inch nut for automobile rear axle assemblies

Finish of the die surface likewise is most important, as a rough surface retards flow of metal and also produces a rough surface on the fin-

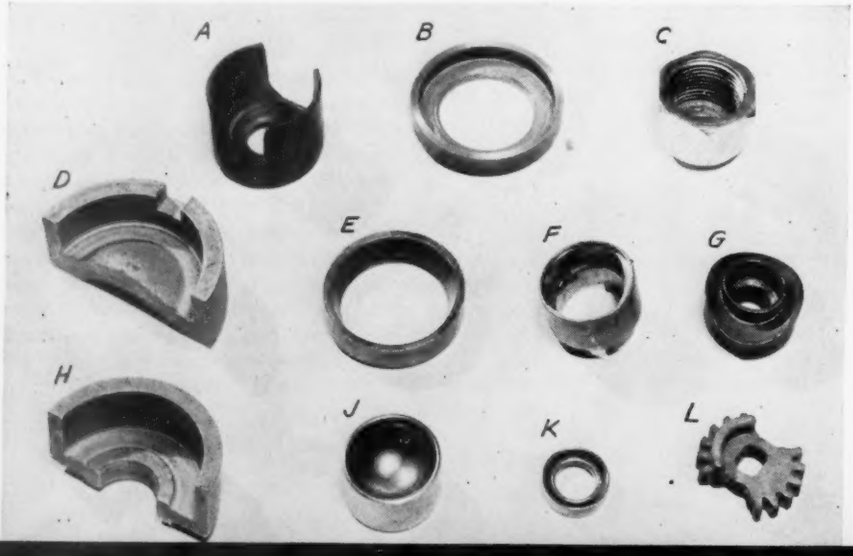


Fig. 2—Pressure-machined parts: A, spring guide for universal joint, SAE 1020; B, ball bearing race, SAE X1020 (0.90 manganese); C, water pump pack nut; D, adjustable ball seat; E, taper bearing race, SAE X1020; F, reverse collar for ratchet; G, adapter collar; H, collar for over-running clutch, SAE 1045; J, tie rod ball seat; K, commutator segment washer; L, segment gear

ished part. Usual practice is both to grind and lap the die cavities. Perfect alignment of die and punch must be maintained to assure accuracy and to prevent breakage. For general use, any good grade of water-hardening cold-header tool steel is satisfactory. In some specific cases, cemented tungsten-carbide dies are excellent. Because of its long-wearing qualities, close tolerances can be obtained consistently and a brilliant luster reproduced on the finished part. However, such dies do not stand up well under severe impact.

Most satisfactory steels for pressure machining appear to be SAE 1010 and 1020 hot-rolled analyses, although Bowen has worked successfully steels up to 0.45 per cent carbon and 0.90 per cent manganese. Nonferrous metals, especially brasses, readily lend themselves to the process because of their favorable ductility.

A typical part produced by this method is a small washer, item K, Fig. 2, used to hold commutator segments on a small high-speed electric motor. Washer has overall diameter of 0.779-inch, thickness 0.182 to 0.192-inch, diameter of hole 0.468-inch. Edges of hole are beveled on both faces, slightly more on the side which draws up against the commutator segments. This face is at an angle of 55 degrees with the vertical and must be held within plus or minus ½-degree. Also face and hole must be concentric within 0.002-inch and absolutely flat.

Produces Flat Surface

In machining the angle on these washers, it was difficult to eliminate a slight high spot on the surface, which resulted in uneven pressure on commutator segments and a noisy motor. Cold forming the washer rectified this error and produced a flat surface on this angle, at the same time holding dimensions within the narrow limits allowed.

Ball and roller bearing races, tie-rod ball seats and bearings are other items produced to advantage by cold-flowing. The process yields the same desirable grain structure as that obtained in a forging, without the appearance of objectionable scale, thus eliminating entirely or reducing to a minimum subsequent machining operations. This is shown in Fig 4. Tests also show parts produced by coldflowing do not distort as much in hardening because of the grain flow in the steel.

Naturally, strains are set up in cold working and the surface of that portion of a part which has been worked the most severely becomes hard. In a good many parts these strains are not objectionable and in some cases this surface hardness is highly desirable. A normalizing treatment will remove the strains if they prove objectionable.

Co-operation of steel producers in supplying special drawn sections and rolled shapes has made possible further advances in coldflowing. For example, in producing a certain part with a channel-shaped cross section, six operations were required to cold form and trim to finished dimensions. A steel company undertook to supply a special channel section to approximately the finished cross section. As a result, operations were reduced to three—cutoff, a single coining operation and trimming.

Butt welding also is being used successfully to effect economies in material when making cylindrical bushings and bearings. Such parts are rolled from flat stock and butt welded at the joint, after which they are subjected to the regular pressure machining operations.

While the process has made rapid advances since its inception, it is the opinion of engineers in the field that the future holds many possibilities for further expansion of pressure machining.

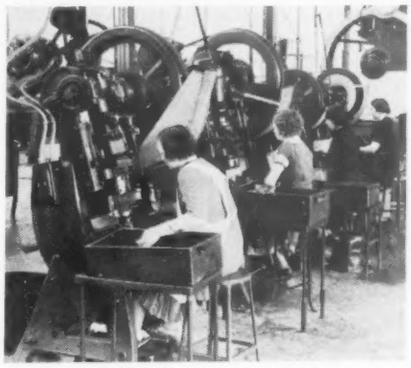


Fig. 3—Battery of four inclinable high-speed presses cold forming valve spring retainers at rate of 1800 to 2000 pieces per hour per machine

Fig. 4—Top, shows grain flow obtained in work produced by pressure machining. Both pieces also have a hard cyanide case. Fig. 5, below, reveals sequence of operations on parts A and L in Fig. 2. Upper piece is annealed between second and third operations and lower piece between third and fourth. Pieces are heated to 1350 degrees Fahr., air cooled and cleaned by pickling or tumbling

Prevent Scoring Bearing Surfaces

■ Oilproof synthetic rubber wipers to replace felt wipers on lathes, planers, grinding machines, milling machines and other shop equipment have been developed by Manhattan Rubber Mfg. Division of Raybestos-Manhattan Inc., Passaic, N. J.

In addition to being resistant to effects of oil, acid or other liquids, these rubber wipers will not absorb grit, metal chips or abrasive material that scores bearing surfaces. They may be molded in sizes to suit machines on which they are to be used and are installed to insure close tolerances between moving parts.

Issues Revised Data On Nickel Alloy Steels

■ The 40-page booklet, "Iron-Nickel and Related Alloys of the Invar and Elinvar Types," has been revised and brought up to date by International Nickel Co. Inc., New York. It is section IV, data sheet No. 1, in the data book, "Nickel Alloy Steels."

This booklet covers the nickel alloys having up to 60 per cent nickel. Alloys above this percentage have specialized magnetic properties and are considered in a separate data sheet—section IV, data sheet No. 2.

Improved Annealing Covers for Tin Plate

(*Concluded from Page* 39)

perature the outer cover is removed and transferred to another loaded base. The fans continue in operation until the coils have cooled, permitting faster and more uniform cooling.

Each cover, internally, is 11½ feet wide, 21 feet long and, from top of stationary base to the spring line, 7½ feet high. Each stationary base has eight coil bases, in two rows of four each. Each coil base is designed to accommodate two coils, one above the other. Inner covers are of light, mild steel sheets, constructed with convex tops. The inner covers are 53 inches in diameter and can accommodate coil stacks 74 inches high. A slight positive pressure is held on the inner atmosphere at all times. Filtration of gas through the sand seal gradually fills the space between outer and inner covers. As a result the inner covers are subjected to very little oxidation and have long life.

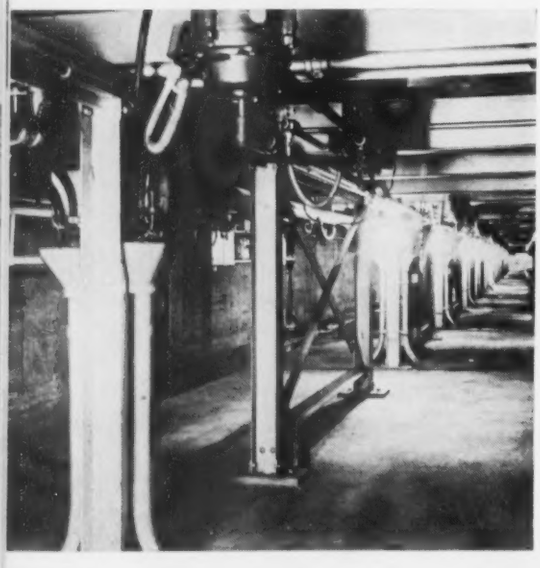
Gases Mixed

These covers operate with a mixture of blast furnace and coke oven gas containing 300 B.t.u.'s per cubic foot, supplied at a pressure of approximately 20 ounces.

The second recent installation, at an Ohio valley tin mill, comprises 14 covers which anneal cold reduced strip after shearing and sizing. These covers are also of the multiple-stack type, containing a center bank of heating elements in addition to the usual two banks arranged along the side walls. Each cover has capacity for annealing 16 stacks of sheared plate per charge.

Both these installations were made by the Surface Combustion Corp., Toledo, O.

This view shows the method of mounting recirculating fans through the base. Each fan is water cooled



Unique Porcelain Finish Imitates Snow Flakes

■ Snowflake porcelain enamel finish developed by J. M. Seasholtz & Sons Inc., Reading, Pa., produces a design which resembles overlapping snowflakes. Because the design is produced by a chemical crystallizing process which makes it possible to develop the pattern on any shape or design, this finish can be applied to irregular surfaces. Such patterns as bas-relief configurations may be obtained. Almost any type of crystalline pattern can be created at will, it is said.

Process is said to be simple and adapted to high production work or to individual items. In operation, the material forming the crystalline pattern is applied by either spraying or brushing after the cover coat of enamel has been burned on. Then under the correct atmospheric conditions, the material will dry into crystals of various shapes and designs which in due time become hard. Oxide pastes can be applied over this to form any of the wide variety of colors which are subsequently burned in the enameling furnace at usual temperatures to form the finish coat. The crystalline effect produced is an integral part of the enamel and so is permanent.

Burden Material

(*Concluded from Page* 41)

regular intervals, which permitted plotting a chart based on total oxygen content of sample showing relation of percentage of reduction to time and temperature.

Initial program of this investigation anticipated running these specimens at increasing temperatures, beginning at 600 degrees Fahr., approximately top heat of furnace, and continuing on up to maximum limits of reaction furnace.

Unfortunately, somewhere between temperatures of 800 and 1300 degrees we experienced that reverse reaction of $FeO + CO = CO_2 + Fe \rightleftarrows 2\ Fe + CO = C + 2\ FeO$, resulting in carbon deposition and formation of CO_2 in excess of amount anticipated from oxygen available in sinter. Had original program of test been feasible, we would probably have found the cause of our unsatisfactory furnace practice much sooner than we did.

The higher temperature curves of which Fig. 2 are typical, showing the reduction of our magnetite sinter in comparison with a hematite sinter at 1500 degrees, gave leading clue to solution of problem. This curve showed that while samples of pure hematite and of hematite ore sintered were completely reduced in CO gas at 1500 degrees, magnetite sinters even though exposed a much longer time were only about 92 per cent reduced at this relatively high temperature. Recognizing that iron oxides should be completely reduced at temperatures below 1500 degrees if given sufficient time, we looked for some other combination of iron and oxygen not reducible at 1500 degrees.

Bureau of Mines about that time published circular RL-3240, presenting the progress reports on "Size Preparation of Iron Ores and Desulphurization Studies," in which Mr. Joseph reported a number of investigations on determinations of fayalite, Fe_2SiO_4, in sinter. He suggested chemical methods for determination of fayalite, and pointed out that the ferrous silicates formed would probably reach the blast furnace hearth, unreduced and might form a protective coating around grains of magnetite, hindering their reduction.

(*Concluded Next Week*)

Air Consumption Regulates Compressor

■ An interesting selective electrical regulation, which automatically controls air output of compressors, has been devised by engineers of Sullivan Machinery Co., Michigan City, Ind.

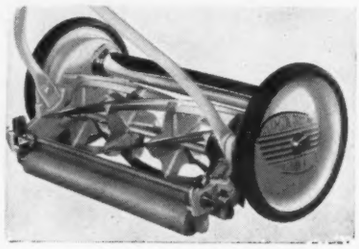
In this application, where maximum output of compressor is required intermittently and continuous demand is light, control responds to the rate of air usage, sampling taking place each time compressor unloads. When maximum capacity is required, compressor motor runs continuously, and compressor is loaded or unloaded to maintain air pressure between 98 and 100 pounds. But when compressor unloads and the sampling feature indicates rate of air usage is low, the motor stops and unit does not start again until air pressure drops a predetermined amount, usually 10 pounds.

Adds Finger Guard

■ A finger guard especially designed to protect thumb, fore and middle fingers against injuries in grinding and sorting operations has been announced by Industries Gloves Co., 736 Garfield boulevard, Danville, Ill. It can be had either in plain leather with or without extra patches, steel reinforcing or steel sewed instead of thread sewed.

NEW METAL PRODUCTS

■ An interesting departure from conventional construction is found in an ultra-modern lawnmower, just



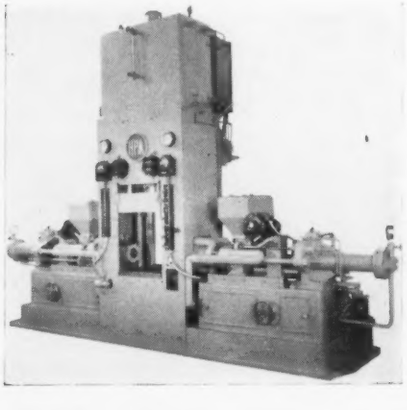
designed and placed on the market by Clemson Bros. Inc., Middletown, N. Y.

Unusual materials, features and finish are embodied in this machine. Its entire reel and fly-knife assembly, consisting of shaft, four spiders and five steel blades, is cast into one piece by a special machine. There are no rivets, no collars, no floating spiders. Zinc alloy diecastings are used for wheels, housings and gears—no aluminum, cast iron or stamped metal parts are employed. Handles are steel tubing welded into one piece with chromium plated grip.

This lawnmower has only 27 separate parts, all interchangeable with other similar parts.

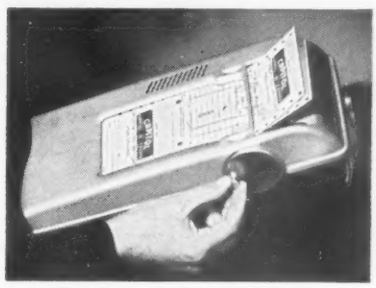
■ Recently introduced by Hydraulic Press Mfg. Co., Mt. Gilead, O., a new hydraulic injection molding press has a clamp pressure of 100 tons and a plasticizing capacity of 80 to 100 pounds per hour.

Vertical, downward acting mold clamp is mounted on a heavy base, with two injection units, one on either side. With a total capacity of 16 ounces, these units move toward the mold when it is clamped so that injection nozzles engage sockets on parting line of the mold. Power unit for operating clamp is mounted overhead at back of frame, and separate power units for each injector are mounted just back of injection cylinder supports. A hydraulic ejector is built into base of the clamp, and is controlled manually by a small valve.



■ An autographic register, combining portability, compactness, light weight and a new "locked-in-copy" feature has been added to the line of Standard Register Co., Dayton, O.

In this machine a continuous audit record is provided by automatic filing of a "secret" copy of all hand written items in a locked compartment. Weighing only 3½ pounds, this register will hold 125 sets of triplicate forms. Move



tickets, shipping reports, packing slips and work orders are some of its industrial applications.

■ Fostoria Pressed Steel Corp., Fostoria, O., has placed on the market a new WC canopy which provides evenly distributed illumination for large working areas.

The unit is 36 inches wide and is available in 2½-foot multiple lengths with a minimum of 5 feet. It accommodates either 150-watt or 200-watt lamps, one socket to each 2½-foot length. According to the manufacturer, the unit delivers an average of 33 foot-candles with two 150-watt lamps over an area of 4 x 6 feet at a mounting height of 48 inches above the working surface.

Inside finish for the reflecting surface is a special matte white baked enamel, while the outside finish is wrinkled grey baked enamel. Weight of the unit is 57 pounds per 5-foot length.

■ Dumore Co., Racine, Wis., has placed on the market a type HL motor which is suitable for such units as coin-operated machines, aircraft cowel flaps, nut roasters and film rewinders.

The motor has a totally enclosed housing and a 30-minute rating, and ordinarily has a 12-coil winding and 12-bar commutator. By mounting the motor on the base of the gear unit rigidity is provided. A double

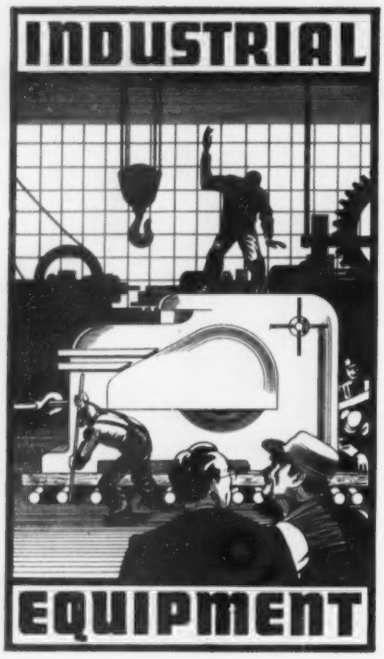
gear-shaft extension makes possible either direction of rotation without changing the rotation of the armature.

■ A flexible steel slat, that will not warp, dent or bend out of shape, has been developed by Atlas Co., Santa Monica, Calif., for use in manufacture of venetian blinds.

Special machinery produces this steel ribbon at a rate of 5000 feet per hour. Slat has a curved surface which does away with direct reflection of light and eliminates glare. A nest of 120 slats is only an inch thick, which means blind will take less light space when drawn to the top of a window.

A steel head also has been designed for use with these blinds. It is made without holes, bolts, nuts or screws, and consists only of ten parts which interlock.

Product is being distributed by Life Time Products Co., 160 North La Brea avenue, Los Angeles.



Motor Revolves Knife On Circular Grinder

■ Samuel C. Rogers & Co., 191 Dutton avenue, Buffalo have placed on the market a cabinet base, floor type, circular knife grinder, known as the CC-3 model, for slitter knives and all circular disks from 2 to 20 inches in diameter.

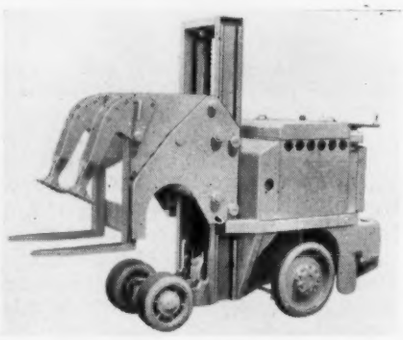
A motor revolves the knife which is held on an interchangeable arbor, fastened in a drive spindle which runs in bronze bushings. The spindle is driven by a V-belt with a sheave, adjustable to the proper circumferencial speed depending on the diameter of knife to be ground. A separate ball bearing motor drives the grinding wheel. Triple slide provides adjustments to meet all requirements of circular grinding, whether single or double bevel of any degree, and for accurate setting a graduated scale is provided.

The unit is equipped with a motor driven wet grinding attachment with suitable splash guards. It also has a built-in two-step coolant tank, equipped with a centrifugal pump, piping and pet cocks for circulation of water. Control switches are conveniently located on the cabinet base.

The grinding wheel is driven by a 1/3-horsepower motor developing 3600 revolutions per minute and the motor driving the knife spindle develops 1700 revolutions per minute. Approximate weight of the unit is 850 pounds and it occupies a floor space of 30 x 34 inches.

Electric Truck Handles Tin Plate

■ Elwell-Parker Electric Co., 4205 St. Clair avenue, Cleveland, has introduced recently a mill truck specially designed to carry tin plate in loads up to 5000 pounds.

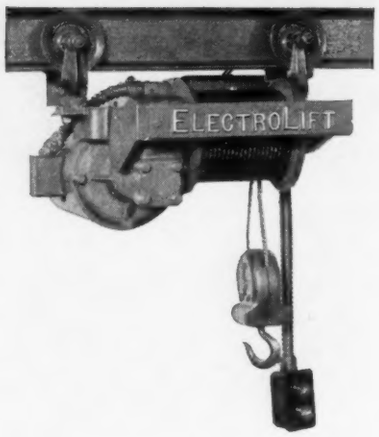


Truck has four-wheel steer and two-wheel direct drive, provided by a heavy duty motor through free coasting worm and gear. Power circuit is closed and broken by a mill type magnetic blow-out contactor. Trail axle is pivoted at center, permitting compensating action in event of rough floors. Steering arms and rods are above axle for greater road clearance and accessibility. Four speeds forward and four reverse are provided.

Tin plate clamps are so designed that, as forks are raised, clamps automatically lower and firmly hold the plate. When not required clamps may be locked in an upright position. A solenoid brake on the hoist motor locks load in position unless released by application of power.

Hoist Has Worm Drive

■ Electro Lift, Inc., 30 Church street, New York, has added to its line a midget electric hoist of the heavy duty, steel cable type, for use in rapid handling of small loads in large production plants.



Lift has worm drive with worm and wheel running on Timken bearings fully enclosed within gear case and operating in oil bath. Motor is attached directly to the hoist frame, giving a compact arrangement, and is equipped with electric brake and automatic electric upper limit switch. Hoist has close headroom between hook and overhead track, and is equipped with enclosed safety hook block. Either rope or push-button control is provided, the latter being preferable because of its accuracy in handling loads. This hoist is furnished for monorail applications, either single or twin hook, or for base mounting in hatchway applications. Six models are offered, varying in capacity from 125 to 500 pounds.

Cleans Paint For Spray Guns

■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, has added to its line a material strainer which fits on inlet of standard production spray

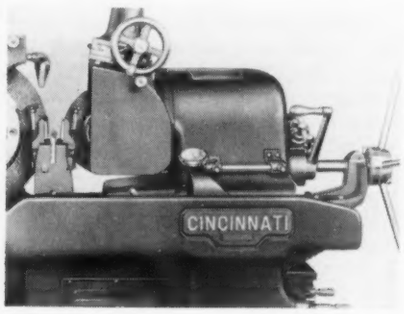
guns for straining paint which is being delivered to the gun.

Strainer serves as a last cleaning agent to remove any foreign matter which might have been picked up in the hose or circulating pipe lines. It is finished with a 250-mesh screen, which can be removed for cleaning.

Grinder Attachment Helps Size Control

■ Cincinnati Milling Machine and Cincinnati Grinders Inc., Cincinnati, has introduced a new precision slide indicator attachment for use with centerless grinders.

This attachment provides a quick and visible means of adjusting the regulating wheel slide to compensate for wheel wear and keep work diameter within specified tolerances. It consists of a bracket which bolts to the upper slide, a steel rod carrying a contact dog, a supporting bracket, and a 3-inch dial indicator



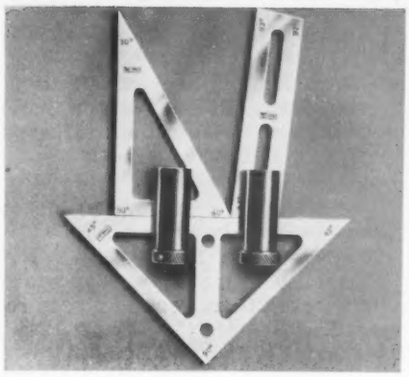
gage. Protection of this gage is provided by a stop, limiting movement of the slide after gage contact to distance of 0.2 inch. Device is mounted and constructed rigidly to assure true reading.

Gages Applied Directly

■ Taft-Pierce Mfg. Co., Woonsocket, R. I., has placed on the market a set of tool steel gages for measuring and laying out angles in toolrooms, die shops and inspection departments.

Complete set will produce accurately any angle between 0 degrees and 180 degrees by 5-minute increments, variation from exact angle never exceeding one minute. Set comprises ten independent angle gages, seven of which are parallel blades with a pair of supplementary angles on each end, and three of which are triangles. Universal angle members are fixed in combination for convenient handling and use by a clamping device, three of which are provided in each set.

These gages have advantage that



they can be applied direct to work without any obstruction. Illustration shows gages set to produce an angle of 36 degrees.

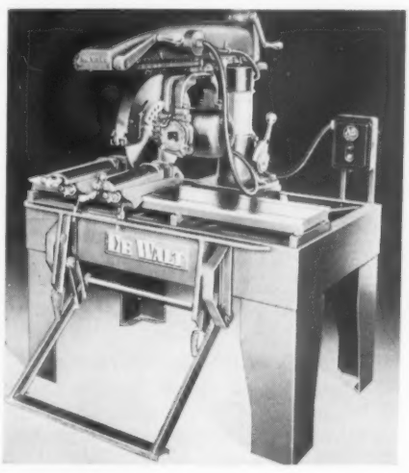
Turning Tool Holder Has Many Uses

■ J. H. Williams & Co., 75 Spring street, New York, has added to its line of tool holders a new carbide tool, manufactured in straight shank and in right and left hand offset patterns in five sizes.

In these tools, cutter is held parallel to shank of the holder; thus the cutter can be ground to provide maximum support for the cutting edge. Holders are broached for either square or flat carbide cutters, but are supplied without cutters, if desired. When equipped with regular high speed steel bits, these holders are well suited for use on planer or shaper.

Cuts Light Gage Metals

■ DeWalt Products Corp., Lancaster, Pa., has introduced a metal cutting machine for rapid sawing of light gage metals, furnished with 5 or 7½-horsepower motor at 3600 revolutions per minute for sawing



aluminum, copper, soft brasses and white metal alloys.

Machine consists of a structural steel table, measuring 30 x 48 inches, on which a semisteel column, base and arm are rigidly mounted. An anti-friction mounted carriage, riding inside the arm, supports motor to shaft of which saw is attached directly. Foot-operated vises clamp material firmly, and a detachable chain feed enables operator to feed work into saw steadily.

Saw travels across material in a straight line. Because machine frame is adjustable, saw will cut bevels without swinging material, while it is clamped firmly by vises. Beside metals, many miscellaneous materials, including ceramics and synthetic resin bonded materials, can be cut with this machine.

Welding Table Revolves

■ Welding division of Ransome Concrete Machinery Co., Dunellen, N. J., has devised a revolving weld-

ing table to facilitate welding on cylindrical and circular products.

Machine enables operator to hold electrode in one position, thus producing a smoother and more uniform weld. Table is 25 inches high and has a 31-inch diameter. Work is bolted to table through eight lines of radial slots. Hand operation of a self-locking worm and wheel tilts unit to a vertical position, where it will carry a load of 600 pounds with a maximum diameter of 34 inches. Table is driven by a ¼-horsepower electric motor driving through a variable transmission. Table speeds range from 0.055 to 0.333 revolutions per minute, corresponding to welding speeds of 0.43 to 2.6 feet per minute, on a 30-inch diameter. For quick positioning, table can be instantly disconnected from driving mechanism.

Has Two Condensers

■ Wagner Electric Corp., 6400 Plymouth avenue, St. Louis, has announced addition of high-torque dou-

ble capacitor motors to its line of single-phase motors.

Motor has two condensers of different value, a high value of capacitance for starting and a low value of capacitance for running. Change of capacitance occurs at approximately 75 per cent full-load speed by means of a centrifugal switch located on motor.

This type of motor is available in ratings of 1/3, ½, ¾ and 1 horsepower. It is intended for use on humidifiers, stokers, refrigerant compressors, or where high starting torque, constant speed, quiet operation and long-hour performance are required.

Press Has Electric Control

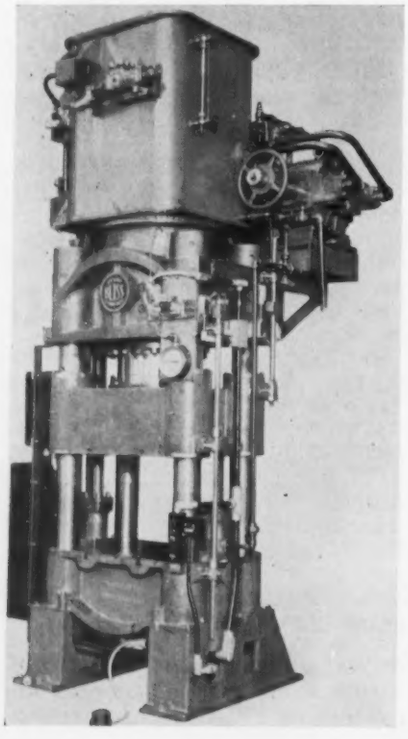
■ E. W. Bliss Co., 1420 Hastings street, Toledo, O., has placed on the market a 350-ton single action press, which has an inching control capable of moving press slide at increments as small as 1/16-inch.

Press is of the open rod type with a moving down slide, guided on all four rods by removable bronze bushings. Maximum stroke is 12 inches, but a simple adjustment will obtain any desired stroke below 12 inches in any part of the full stroke travel. Slide has high speed approach to work and changes automatically to pressing speed, which is continued until selected pressure is obtained after which it reverses and returns automatically to starting position at high speed.

It is possible with this press to obtain as high as 45 strokes a minute when operating on a short stroke, as in coining or embossing work.

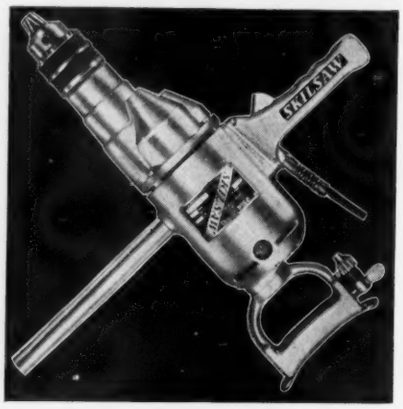
Control of press is electrical throughout. Either foot or hand button starting can be used, and multiple starting buttons can be provided where required.

Bed and slide areas are 30 inches square. Press is 12 feet high overall, and weighs 18,000 pounds. A 30-horsepower motor, with a speed of 850 revolutions per minute, is required.



Special Duty Drills Operate At Low Speeds

■ Skilsaw Inc., 3345 Elston avenue, Chicago, has offered three special duty drills, of ⅝, ¾ and ⅞-inch capacity, which combine low speed and high torque to bring a degree of drilling power formerly available only in heavy duty production drills.

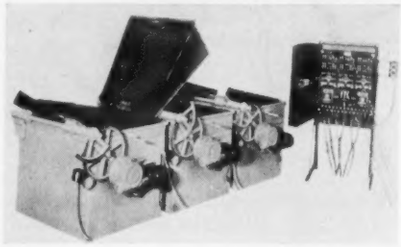


These drills are light and compact, and can be used with carbon bits, with ship augers for wood drilling and with hole saws for cutting holes up to 4¼ inches diameter. Model 101 has a ⅝-inch capacity in steel and is suitable for maintenance and repair service. Model 121 has a ¾-inch capacity and is recommended for general shop service and intermittent production drilling. With a no-load speed of 200 revolutions per minute, Model 141, with a capacity of ⅞ inch, is powered for tough drilling jobs on metal and wood. All three models have triple reduction, helical-cut gears of heat-treated steel, and are equipped with Timken tapered roller bearings on chuck spindle.

Plating Equipment Has Large Capacity

■ Hanson-Van Winkle-Munning Co., Matawan, N. J., has developed a line of hopper type barrel plating equipment which gives large production capacity in small floor space, permits proper control of treatments and segregates various classes or batches of work without confusion.

In operation, work which has previously been ball rolled or sand rolled is dropped into hopper of first tank, receives a cold water rinse, and then proceeds from one hopper to another through a cleaner, cold water rinse, an acid dip, another cold rinse, and then to an empty plating barrel cylinder. After being plated for the required time, work goes again from one hopper to another and finally into a centrifugal drier where all moisture is removed.



Lifting of hoppers for dumping can be effected manually or by electric hoist, the latter being recommended where loads are heavy and operation rate is high. Several different designs of hoppers are used in different locations, depending upon size of articles. Hoppers are either plain steel or monel metal. Tanks are plain steel or rubber lined, with bottom drain outlets and overflow dams. Each hopper load is equivalent to plating cylinder load, which varies from 50 to 150 pounds.

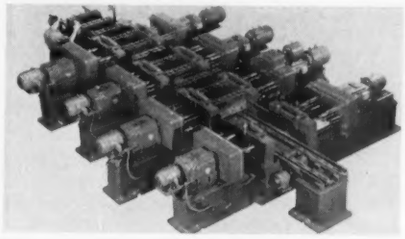
Each tank has individual motor drive and limit switch, thus permitting addition of as many hopper units as required. Entire assembly is automatically controlled from a master panel board, equipped with dials to give selected dwells of from 20 seconds to 4 minutes per tank. All operations, including that of plating barrels, can be handled by two men, at production rate of about 2250 pounds per hour.

Performs Many Drilling Operations

■ National Automatic Tool Co., Richmond, Ind., has announced a multiple drilling and tapping machine designed to perform a total of 47 drilling, chamfering, counterboring, reaming and tapping operations on two ends of an automobile engine block.

Machine consists of eight drilling units and one tapping unit, operating in combination with a straight-line mechanical indexing fixture which is arranged to hold two cylin-

der blocks in each of the six positions. Each drilling unit is equipped with a fixed center gear driven spindle box, the eight boxes containing a total of 84 bearing mount-



ed spindles. Auxiliary reversing motor drive tapping unit has four spindles complete with individual lead screws and tap holders.

One operator loads machine and completely controls its operation through pushbutton control at a single convenient station. Cylinder blocks come to machine on a roller conveyor. Once positioned by operator at loading station, blocks are indexed automatically from station to station and are automatically unloaded. Entire machine is interlocked electrically, and operates at a normal production rate of 90 blocks per hour.

Improves Efficiency Of Hose Equipment

■ D. J. Murray Mfg. Co., Wausau, Wisc., has developed an automatic shutoff valve, designed as a safety appliance to promote efficient use of tools wherever flexible hose is employed.

Valve is placed in supply line above hose used to convey compressed air, steam, gas or fluids under pressure, and immediately shuts off supply when there is a break in the hose or when it becomes disconnected. Device operates on principle of equalization. As long as pressure at inlet and outlet is the same, or nearly the same, plunger is maintained in an open position by means of a spring, permitting air, steam or other supply to flow around it in a normal manner. Plunger may be adjusted to shut off flow automatically at any desired pressure at the inlet, or size of break at or below the outlet.

Die Head for Brass Work

■ Eastern Machine Screw Corp., New Haven, Conn., has developed a new size insert chaser die head for rotary spindles.

It has a capacity up to ⅝-inch 16-thread screws on steel, although it is only 2⅛ inches in diameter by 2 5/32 inches overall, including shank, and weighs less than 1½ pounds. Die head is especially suitable for brass work where Davenport automatic screw machines are set up for rates of production in neighborhood of one second or slightly over.

Heavy Duty Grinders

■ Hisey Wolf Machine Co., Cincinnati, has placed on the market heavy duty grinders of 1 and 2-horsepower capacity which grind straight or taper shank drills with 2, 3 or 4 flutes, flat or chucking drills, flat twisted drills and those with oversize shanks.

The grinders are available in either direct or alternating current. They are equipped with one cup

and one straight wheel, and provide adjustment for grinding cutting clearance. Point angle can be varied from 37 to 70 degrees. They have a speed of approximately 1750 revolutions per minute.

Balancer Suspends Tools

■ Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, has developed a device for suspending large, powerful electric and pneumatic drills, nut setters and similar tools above working locations.

Known as the Thor torque arm balancer, this equipment supports tool, absorbs torque and eliminates danger of injury to operators when tool sticks. No effort is required to lift or hold tool or fight torque.

Device is made with a range of travel from 3 to 6 feet and a load capacity from 45 to 100 pounds. Equipment weighs 143 pounds complete.

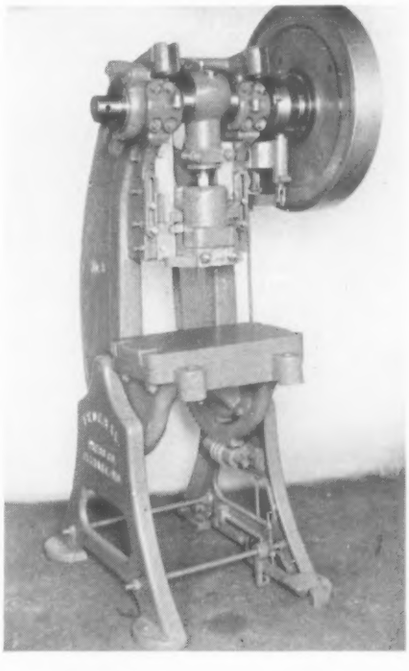
Torque arm telescopes to allow maximum amount of travel when open and minimum head room when closed. It is attached at top to load frame in a rocking bracket that permits tool to be swung backward or forward to either side. A yoke bracket at bottom of torque arm accommodates all shapes and sizes of yokes. Equipment is adjusted to balance at working level. When not in use balancer is raised to top position, where it locks automatically, holding tool above operator and providing ample clearance.

Multi-Pin Clutch Is Fast

■ Federal Press Co., Elkhart, Ind., has made available on its full line of presses a multi-pin clutch, featuring several improvements over conventional sliding pin and sleeve type clutches.

Greater speed is obtained by use of multiple pins mounted in crankshaft, which engage with a like number of openings in a steel plate attached to the flywheel. A minimum of space is allowed between pins, making action instantaneous when press is tripped. Power or energy from the flywheel is transmitted directly to crankshaft, since clutch pins are mounted in a solid forging. Load is distributed equally on flywheel end of shaft. Pins are moved in and out of engagement by a cam of alloy steel, operated by contact with a shaft running horizontally toward the rear of the press.

Incorporated into clutch is a simple positive built-in stroke tripping mechanism, which is engaged or disengaged easily for single or continuous operation. Another feature is a safety device which, when engaged, will hold the clutch out of



operation, making it impossible for clutch to engage with flywheel when it is in motion, in event foot pedal is depressed.

Illustration shows press equipped with multi-pin clutch.

Instrument Records Heat Radiation Accurately

■ Bristol Co., Waterbury, Conn., is offering a new radiation pyrometer which uses as a temperature-sensitive unit an instrument known as the Ardometer.

This instrument measures surface temperature of hot objects or masses above 1000 degrees Fahr., when it is sighted to pick up heat rays emitted. Temperature is recorded on a round or strip-chart recorder, used with a potentiometer. The fact that the instrument can be sighted directly on object in the furnace enables it to follow with fidelity temperature changes which occur.

Speeds Filing

■ Continental Machine Specialties Inc., 1301 Washington avenue, Minneapolis, has added to its line a band filer, with a file assortment which permits use of machine on any metal or alloy, plastics, fibers and wood.

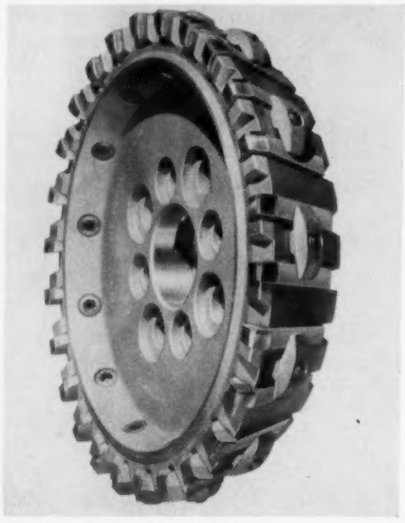
Short segments of special files are riveted to spring steel band. When the band flexes over upper or lower pulley, file segments open, but they close and interlock securely as soon as they leave the upper wheel, forming a continuous filing surface at the point of work.

Bands are furnished in various standard cuts and shapes, ¼ and ⅜-inch wide. A narrow support at point of work gives steady pressure to band files, which causes filing surface to be used up evenly. Variable speed feature permits selection of just the proper speed for each particular job. Files band are driven by a special rubber faced pulley.

Machine has a 12-inch work table, which tilts so that work may be filed at an angle. A single housing contains all working parts. Filer is 32 inches high, weighs 150 pounds, and is portable. It is driven by a ¼-horsepower motor, mounted at rear of the machine.

Device Expands Lathe Operations

■ Warner & Swasey Co., 5701 Carnegie avenue, Cleveland, has announced an attachment to permit use of the hexagon turret for accurate cutting of threads on a ram type turret lathe.



The entire attachment, which can be used for the leading-on of die heads and taps or for cutting threads by single point method, is controlled by one operating lever and the regular stop screws in end of turret slide. The control lever first engages the half nuts with the leader, then engages the single tooth clutch at bottom of gear box. This causes leader to rotate and the turret slide to move according to the pitch of the leader. Half nuts are engaged through a positively actuated cam, with no springs.

Range of threads with standard head and gear box is 4 to 32 threads per inch in any lengths up to the full effective stroke of the turret slide.

Broaching Machine Is Completely Automatic

■ Colonial Broach Co., 1036 Book building, Detroit, has introduced a special high speed horizontal hydraulic broaching machine, capable of broaching two flat surfaces each on more than 3000 steel hydraulic brake couplings per hour.

Machine is completely automatic in operation. Operator merely starts machine and drops parts into two loading apertures at top. Finished parts are ejected into basket. Broaches are stationary, the work being pushed through broaches. There are two sets of broaches, permitting simultaneous machining of two pieces at each stroke.

Standard hydraulic operating units are used, driven through a 7½-horsepower motor. Cycle is set to give a broaching speed of 45 feet per minute, with a return speed of the ram of twice that figure.

Compressor Has V-Type Construction

■ Ingersoll-Rand Co., Phillipsburg, N. J., has announced a new 2-stage compressor designed to provide an economical source of compressed air for garage and service stations.

Unit embodies V-shape design, which allows air circulation around each cylinder, assuring excellent cooling, and provides good balance and smooth running. An outstanding feature is simplified valve construction. Compressor is manufactured in 1½ and 2-horsepower sizes and is supplied with either horizontal or vertical tanks of 65-gallon capacity, or 80-gallon capacity in horizontal style only.

Snagging Grinder Has Variable Speed

■ Cincinnati Electrical Tool Co., division of R. K. LeBlond Machine Tool Co., Cincinnati, has announced a variable speed snagging grinder which can be furnished for use with either high speed or vitrified grinding wheels.

Machine employs two adjustable pitch sheaves to give variable speed feature, one sheave being mounted on motor shaft and the other on a counter shaft within pedestal of the grinder. Wheel guards are boiler

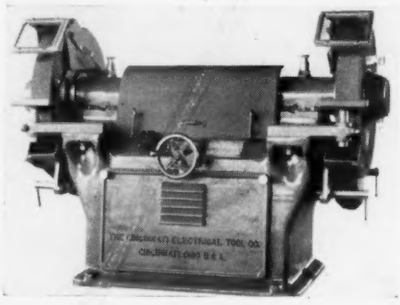


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plate with hinged covers and comply with existing safety regulations. Shatterproof glass eye shields are furnished as standard equipment.

Grinder is constructed to carry wheels up to 30-inch diameter, with motors up to 15-horsepower. A fully enclosed, fan-cooled motor and magnetic starter with pushbutton control are standard equipment.

Mixing Tank Has Pressure-Tight Cover

■ DeVilbiss Co., 2325 Madison avenue, Toledo, O. announces a hinged-lid mixing tank, designed to facilitate agitation of lacquer, synthetic enamel and other pigmented finishing materials.

Tank provides an inert atmosphere for mixing, thereby preventing oxidation of materials while handling. Available in 30, 60 and 120-gallon capacities, tank is plain, straight-sided shell inserted into a foot ring. Covers are hinged across tank with malleable cast iron hinges, and are rendered pressure-tight by clamps. Leakage of explosive vapors into mixing room is prevented by a special solvent resisting gasket. Tank is equipped with an explosion-proof motor, which provides a degree of agitation adequate for mixture of heavy bodied pigment portions throughout entire batch.

Polishes Heavy Work

■ Hammond Machinery Builders Inc., Kalamazoo, Mich., has added to its line of polishing and buffing equipment a single end lathe for heavy, bulky work.

Combination switch and brake enables operator to shut off motor and stop revolving spindle instantly. Chromium nickel spindle runs in three ball bearings. When wheels are being changed, a special lock holds spindle securely in place. Motors range up to 10 horsepower capacity, with multi-V-belt drive, and automatic motor starter has overload and low voltage protection.

Drills and Taps Automatically

■ Royce Machine Co., 2418 West Madison street, Chicago, has introduced an automatic drilling and tapping machine which performs both operations at one time on small metal parts and fittings at rate of 1200 per hour, or performs a single operation at rate of 2500 pieces per hour.

In operation, metal pieces are dropped into one of twelve chucks on revolving turn table as it passes operator. Each part automatically indexes to first station, where it is

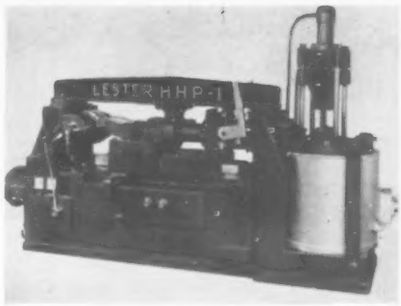
locked for drill head to lower and drill. Next revolving table moves to second station, where high speed tapping unit lowers and taps, and finally to third station, where air pressure ejects the piece.

New type chuck and jaws accommodate almost every kind and shape of small metal work up to ¾-inch without additional fixtures or changed setup. Vertical mechanism of machine has heads which are driven independently by cam drives, and are accurately synchronized. Entire mechanism is enclosed in solidly built, streamline housing, making machine both compact and attractive.

Has Finger-Tip Control

■ Phoenix Ice Machine Co., 2711 Church avenue, Cleveland, has added to its line a die casting machine, known as the Lester No. HHP-1, equipped with an independently mounted round furnace.

Machine has a positive die-locking arrangement consisting of centrally operated toggle links actuated by a hydraulic rotary cylinder. Central adjustment of die space without misaligning die plates enables plates to be adjusted in a minimum of time. Spring-actuated accumulator gives high injection speed and minimum pressure drop, and obviates recharging of gas. Machine has an injecting mechanism which permits adjustments to and from the die opening.

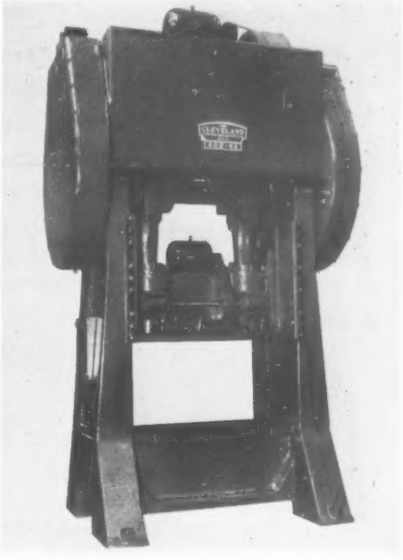


Finger-tip control regulates all phases of operating cycle except opening and closing dies. Periods for maintaining pressure on molten metal and for cooling it in the die can be controlled down to a fraction of a second.

Press Has Twin Drive

■ Cleveland Punch & Shear Works Co., St. Clair avenue at East Fortieth street, Cleveland, has placed on the market a straight sided double crank press, designed with a box type crown, with intermediate gearing and flywheel in the crown.

Machine is double back geared and has a twin drive equipped with electrically controlled hydraulically operated friction clutch. Front and rear of press are identical except for slide adjusting mechanism, which is power operated by individual motor. Slide is counterbalanced by air, the counterbalance being mounted in uprights.



Continuous Strip Mill

(*Concluded from Page* 48)

The crane which picks up stacked sheets for delivery to the cooling bay is equipped with a special design of pack lifter, Fig. 3, which consists of goose neck arms attached to a structural steel cross arm on which is a chain for crane hooks. The fingers of this lifter slide under the pack as it rests in the piler and the crane carries the hot pack to the cooling skids.

Cranes again enter the picture after cooling when they transport sheets to continuous normalizing furnaces where the pack is deposited on a table for manual charging of single sheets onto a disk-type conveyor, shown in Fig. 4, which carries them through the furnace. The hot mill finishing and blue annealing departments are serviced by five 20-ton cranes, each with span of 108½ feet.

In these departments another type of sheet lifter is used, consisting of four crossarms attached at their centers to a pipe. Crossarms support the pack lifting hooks and are notched so hooks may be adjusted to width of pack as shown in Fig. 5. These lifters have a capacity of ten tons and are capable of handling sheets in packs up to 30 inches deep, in widths of 24 inches to 84 inches, and lengths up to 14 feet.

(*Concluded Next Week*)

● For heat treating furnace charging, Cleveland Tramrail has developed several types of equipment. This one a Rotating Heat Treating Furnace Charger. Cold Heat Treating Pots are picked up from the roller conveyor; the charging unit rotated 180 degrees; the complete unit is then lined up with the proper furnace door and locked into position. Hot charges are returned to another conveyor line by reverse motion.

ALSO BUILDERS OF

CLEVELAND CRANES

FOR EVERY INDUSTRY

CLEVELAND TRAMRAIL

Division of

THE CLEVELAND CRANE & ENGINEERING CO.

1125 Depot St.

WICKLIFFE, OHIO

Or consult your phone directory under Cleveland Tramrail.

Business Letters and Office Management

■ *Business Correspondence and Office Management*, by Edward A. Duddy, L. E. Frailey and Raymond V. Cradit; cloth, 124 pages, 5½ x 8¼ inches; published by American Technical Society, Chicago; supplied by STEEL, Cleveland, for $1.75; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

Modern business correspondence and office management have assumed the nature of professions in these days of large concerns and complicated organizations. Machinery and other aids for keeping records have come into being where the pen and a few books formerly served. Departments have been organized to care for various details of recording and carrying on business and the need for supervisors trained in this work has asserted itself.

The volume under discussion takes up the problems of organization and equipment, modern methods of business and plans which have proved of value. In the section on business correspondence sample letters to fit various needs are included to give point to the text. In the section on office management both methods and mechanical aids are described fully and results to be obtained are covered.

Putting the Sizzle into The Selling Campaign

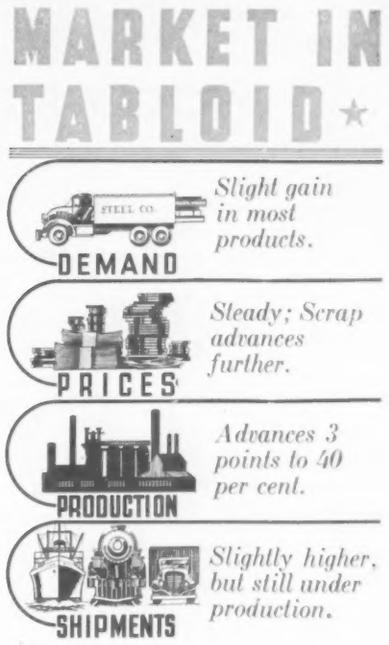
■ *The Sizzle Book*, by Elmer Wheeler; paper, 209 pages, 6 x 9 inches; published by Prentice-Hall Inc., New York; supplied by STEEL, Cleveland, for 75 cents; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

The publishers have created this volume by choosing about a dozen selected paragraphs from the author's volume, *Tested Sentences That Sell*, which is now in its fourth printing. It presents the five Wheeler points, several chapters explaining the Wheeler philosophy of selling and a new chapter written especially for this book, "Putting the Sizzle Into Hams, Airlines and Silverware."

It contains the gist of Mr. Wheeler's work in measuring the effectiveness of spoken words and selling techniques. Its purpose is to take the guess and gamble out of everyday sales presentations.

Demand Rises Slowly; Output at 9-Month High

Auto Builders Ready To Start New Models; Scrap Strong



■ STEEL demand continued its slow upward swing last week, and the national steelworks operating rate advanced 3 points to 40 per cent of capacity. The steelmaking rate still exceeds current consumer requirements by several points as mills continue to build up stocks in anticipation of better business within the next several weeks.

Brighter prospects for the automotive industry as the new model year approaches is the strongest feature of the market, and a substantial increase in steel orders from this source is expected later this month.

First of the 1939 models will be completed this week and several manufacturers are planning to assemble new cars for display purposes by Sept. 1.

A few releases for experimental models continue to be received by steel mills, and fairly heavy orders, probably for shipment early in September, are anticipated.

Retail demand for new cars has been contraseasonal in trend, many companies reporting July shipments exceeded, or equaled, those of June.

Miscellaneous consumers continue an important factor in the market. Award of 153 additional cars by the Southern railway and placing of additional steel tonnages by the Pennsylvania, with prospects for more, is bolstering the market. Government construction projects requiring heavy tonnages of structurals and reinforcing steel are beginning to appear, although most of this will not develop for 30 or 60 days.

Ingot production at practically all centers increased last week. Pittsburgh advanced 4 points to 33 per cent of capacity; Chicago gained ½ point to 38; eastern Pennsylvania 1 point to 29; Youngstown 2 points to 40; Wheeling, W. Va., 8 to 54; Cleveland 15 to 38; Cincinnati 8 to 58 and St. Louis 5½ points to 30. Birmingham, Ala., and New England each lost 3 points, to 50 and 35 per cent respectively. Detroit was unchanged at 38, and Buffalo held at 39½ per cent.

With July estimated, ingot production for the first seven months this year totaled 12,600,000 tons. For the past 11 years more than half of each year's production has been made by Aug. 1.

Pig iron output in July gained 10.7 per cent in daily rate and 14.3 per cent in total tonnage. Average daily production was 39,122 gross tons, compared with 35,358 tons in June, 40,675 in May, and 112,947 in July 1937.

Total for the month was 1,212,784 tons, against 1,060,747 tons in June, 1,260,937 in May, and 3,501,359 in July last year. Seven months' output this year aggregates 9,143,882 tons, compared with 23,272,694 tons in the period last year, a loss of 60.4 per cent. Number of furnaces in blast registered the first gain since July last year. Active stacks in July totaled 77, against 67 in June, and 192 in July, 1937.

Shutdowns for inventory and changeover caused motor car assemblies to drop sharply to 14,771. This compares with 30,390 in the week before, and 79,736 in the week ending Aug. 7, 1937. General Motors built 10,800 units last week, against 11,800 in the preceding period; Chrysler 800 compared with 770; Ford dropped to 575 from 12,800; and the independents to 2596 from 5020.

The tin plate price situation has contributed to a slowness in tin plate orders, especially since the announcement of reduction in tin mill black plate and elimination of the Gary differential in all tin mill products. Consumers now are awaiting announcement of fourth quarter prices.

Scrap prices increased at practically all important centers causing STEEL'S composite to advance 55 cents to $14.63, highest since last Fall.

Scrap's strength also raised the iron and steel composite 6 cents to $36.49. Finished steel composite was unchanged at $57.20.

Cables from Great Britain indicate a quieter steel market with little improvement expected before fall. Pig iron and semifinished steel stocks are large. Heavy steelworks are booked for three months ahead, while lighter works are operating at about 50 per cent.

COMPOSITE MARKET AVERAGES

	Aug. 6	July 30	July 23	One Month Ago July, 1938	Three Months Ago May, 1938	One Year Ago Aug., 1937	Five Years Ago Aug., 1933
Iron and Steel	$36.49	$36.43	$36.30	$36.32	$38.50	$40.34	$29.92
Finished Steel	57.20	57.20	57.20	57.20	61.70	61.70	47.50
Steelworks Scrap..	14.63	14.08	13.50	13.06	11.47	20.41	11.57

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Aug. 6, 1938	July 1938	May 1938	Aug. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.45c	2.45c
Steel bars, Chicago	2.25	2.25	2.50	2.50
Steel bars, Philadelphia	2.57	2.57	2.77	2.76
Iron bars, Terre Haute, Ind.	2.15	2.15	2.35	2.35
Shapes, Pittsburgh	2.10	2.10	2.25	2.25
Shapes, Philadelphia	2.215	2.215	2.40	2.455
Shapes, Chicago	2.10	2.10	2.30	2.30
Plates, Pittsburgh	2.10	2.10	2.25	2.25
Plates, Philadelphia	2.15	2.295	2.41	2.435
Plates, Chicago	2.10	2.10	2.30	2.30
Sheets, hot rolled, Pittsburgh	2.15	2.15	2.40	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.45	3.15
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.80	3.80
Sheets, hot rolled, Gary	2.15	2.15	2.50	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.25	3.25
Sheets, No. 24, galv., Gary	3.50	3.50	3.90	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	37.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	37.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	47.00	47.00

Pig Iron

	Aug. 6, 1938	July 1938	May 1938	Aug. 1937
Bessemer, del. Pittsburgh	$21.34	$21.34	$25.34	$25.26
Basic, Valley	19.50	19.50	23.50	23.50
Basic, eastern, del. Philadelphia	21.34	21.34	25.34	25.26
No. 2 foundry, Pittsburgh	21.21	21.21	25.21	25.21
No. 2 foundry, Chicago	20.00	20.00	24.00	24.00
Southern No. 2, Birmingham	16.38	16.38	20.38	20.38
Southern No. 2, del. Cincinnati	19.89	19.89	23.89	23.69
No. 2X eastern, del. Philadelphia	22.215	22.215	26.215	26.135
Malleable Valley	20.00	20.00	24.00	24.00
Malleable, Chicago	20.00	20.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	30.34	30.04
Gray forge, del. Pittsburgh	20.17	20.17	24.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	107.77	107.29

Scrap

Heavy melting steel, Pittsburgh	$15.25	$12.05	$11.55	$21.85
Heavy melt. steel, No. 2, E. Pa.	13.25	12.20	10.00	18.00
Heavy melting steel, Chicago	14.25	12.05	11.05	19.75
Rails for rolling, Chicago	18.75	17.05	14.85	21.75
Railroad steel specialties, Chicago	16.75	14.95	13.60	22.25

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$4.25	$4.50
Connellsville, foundry, ovens	5.00	5.00	5.25	5.30
Chicago, by-product fdry., del.	10.50	10.80	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh, Gary	2.15c
Chicago, delivered	2.18c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown	2.15c
Youngstown	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh, Gary	3.20c
Chicago, delivered	3.23c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown	3.20c
Youngstown	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh, Gary	3.50c
Chicago, delivered	3.53c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown	3.50c
Youngstown	3.50c
Pacific Coast points	4.00c

Tin Mill Black No. 29

Pittsburgh	3.15c
Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin plate, coke (base box) Pittsburgh, Gary	$5.35
Granite City	5.45
Mfg. terne plate, Pittsburgh, Gary	4.65c
Granite City	4.75c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts.-Cleve.-Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.80c
Detroit, delivered	2.90c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23/8-in. Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Pittsburgh, Chicago	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00
Angle bars, billet, mills	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 70-5 off; in packages with nuts separate 70-10-5 off; in bulk 80-5 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off

Plow Bolts

All sizes	65-5-5 off

Nuts

Semifinished hex.; ⅛-in. and smaller	60-10-5 off
Do., ⅛ to 1-inch	60-5-5 off
Do., over 1-inch	60-5 off

Hexagon Cap Screws

Milled	50-10-5 off
Upset, 1-in. smaller	70-5-5-off

Square Head Set Screws

Upset, 1-in., smaller	80-5-5 off
Headless set screws	75-5 off

Rivets, Washers

Structural, Pittsburgh, Cleveland	3.40c
Structural, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
1—3	68½	60½

Iron

¼	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 *to* 9 x 9-*in., base*

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to 9/32-inch incl.	43.00
Do., over 9/32 to 11/32-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	6.75c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia	$26.50

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$21.00	$21.50	$20.50	$22.00
Birdsboro, Pa.	21.00	21.50	20.50	22.00
Birmingham, Ala.‡	16.38	.....	15.38	21.00
Buffalo	20.00	20.50	19.00	21.00
Chicago	20.00	20.00	19.50	20.50
Cleveland	20.00	20.00	19.50	20.50
Detroit	20.00	20.00	19.50	20.50
Duluth	20.50	20.50	.....	21.00
Erie, Pa.	20.00	20.50	19.50	21.00
Everett, Mass.	21.75	22.25	21.25	22.75
Granite City, Ill.	20.00	20.00	19.50	20.50
Hamilton, O.	20.00	20.00	19.50	.....
Neville Island, Pa.	20.00	20.00	19.50	20.50
Provo, Utah	18.00	.....	.....	.....
Sharpsville, Pa.	20.00	20.00	19.50	20.50
Sparrow's Point, Md.	21.00	.....	20.50	.....
Swedeland, Pa.	21.00	21.50	20.50	22.00
Toledo, O.	20.00	20.00	19.50	20.50
Youngstown, O.	20.00	20.00	19.50	20.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	21.39	21.39	20.89	21.89
Baltimore from Birmingham	21.78	.....	20.66	.....
Boston from Birmingham	21.87	.....	.....	.....
Boston from Everett, Mass.	22.25	22.75	21.75	23.25
Boston from Buffalo	22.25	22.75	21.75	23.25
Brooklyn, N. Y., from Bethlehem	23.50	24.00	.....	.....
Canton, O., from Cleveland	21.39	21.39	20.89	21.89
Chicago from Birmingham	†20.22	.....	.....	.....
Cincinnati from Hamilton, O.	20.44	21.11	20.78	.....
Cincinnati from Birmingham	20.06	.....	19.06	.....
Cleveland from Birmingham	20.32	.....	19.82	.....
Mansfield, O., from Toledo, O.	21.94	21.94	21.44	21.44
Milwaukee from Chicago	21.10	21.10	20.60	21.10
Muskegon, Mich., from Chicago, Toledo or Detroit	23.19	23.19	22.69	23.69
Newark, N. J., from Birmingham	22.15	.....	.....	.....
Newark, N. J., from Bethlehem	22.53	23.03	.....	.....
Philadelphia from Birmingham	21.46	.....	20.96	.....
Philadelphia from Swedeland, Pa.	21.84	22.34	21.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	22.45	22.45	21.95	21.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.55	20.55	20.05	.....
St. Louis from Birmingham	†20.12	.....	19.82	.....
St. Paul from Duluth	22.08	22.08	.....	22.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $25.50, Phil. base, standard and copper bearing, $26.63.

Gray Forge		Charcoal	
Valley furnace	$19.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	19.50	do., del. Chicago	28.34
		Lyles, Tenn	23.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $24.50; 6.51-7—$25.00; 7-7.50—$25.50; 7.51-8—$26.00; 8-8.50—$26.50; 8.51-9—$27.00; 9-9.50—$27.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50; Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00; Do., New Orleans 28.00; Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50; Do., ton lot 80.50; Do., 75 per cent 126.00. Spot, $5 a ton higher.

Silicoman., 2½ carbon 97.75; 2% carbon 102.75 1%, 112.75. Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.79-2.80

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c; Do., ton lots 11.25c; Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c; Do., ton lots 17.25c; Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots 1.23; Do, less-ton lots 1.25

20-25% carbon, 0.10 max., ton lots, lb. 1.35; Do, less-ton lots 1.40

Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls 2.25; Do, less-ton lots 2.30

Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton 142.50; Do, spot 145.00; Do, contract, ton lots 145.00; Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50; Do, spot 160.00; Do, contract, ton lots 160.00; Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c; Do, ton lots 8.00c; Do, less-ton lots 8.50c

Spot ½c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c; Do, spot carlots, bulk 7.50c; Do, ton lots 8.00c; Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. 2.40; Do, smaller lots 2.50

Vanadium Pentoxide, contract, lb. contained 1.10; Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c; Do, spot 85.00c; 88% chrome, contract 79.00c; Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c; Do, 2% 13.00c

Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton 69.50; Carload, spot 74.50; Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c; Ton lots 5.25c; Less-ton lots 5.50c

Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton 97.50; Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c; Do, ton lots 15.00c; Do, less-ton lots 16.00c

Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. 2.60; Do, 100-200 lb. lots 2.75; Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	. .	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.85
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.68
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	4.00	4.00	3.80	3.83	5.43	3.75	....	4.78
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.40	4.40	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.15	4.15	5.90	4.30	....	5.60
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	4.30	6.50	5.25
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	9.25	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.58	4.00	7.60	6.20	8.73	9.28	8.88	7.48
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.85	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	.	....
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9 05	10.40	9.55
San Francisco	9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, August 4

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channel or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$26.95 5 10 0	$15.04	1 17 0
Basic bessemer	....	18.09	2 4 6
Hematite, Phos. .03-.05	31.85 6 10 0	....	.....
Billets	$38.59 7 17 6	$34.55	4 5 0
Wire rods, No. 5 gage	55.25 11 5 6	41.67	5 2 6
Standard rails	$49.61 10 2 6	$46.75	5 15 0
Merchant bars	2.41c 11 0 0	1.94c	5 5 0
Structural shapes	2.33c 10 12 6	1.79c	4 17 6
Plates, †¼ in. or 5 mm.	2.53c 11 11 3	2.07c to 2.25c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.85c 13 0 0	2.71c	7 7 6°
Sheets, gal., 24 ga., corr.	3.67c 16 15 0	3.17c	8 12 6
Bands and strips	2.90c 13 5 0	2.02c	5 10 0
Plain wire, base	4.27c 19 10 0	2.25c to 2.67c	6 2 6 to 7 5 0
Galvanized wire, base	5.09c 23 5 0	2.89c to 2.99c	7 17 6 to 8 2 6
Wire nails, base	4.05c 18 10 0	2.57c to 2.79c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.96 1 0 3	.....	.....

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$26.70	5 9 0(a)	$16.50	598	$14.87	440	$25.28 63
Basic bess. pig iron	24.50	5 0 0(a)	.....	...	.....	...	27.89 (b) 69.50
Furnace coke	6.74	1 7 6	5.66	205	7.27	215	7.62 19
Billets	38.59	7 17 6	23.18	840	29.07	860	38.73 96.50
Standard rails	2.21c	10 2 6	1.50c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.67c	12 4 0††	1.40c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.41c	11 0 6††	1.37c	1,055	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.56c	11 14 3††	1.76c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.45c	15 15 0§	2.08c	1,600‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.05c	18 10 0	2.93c	2,250	4.13c	2,750	6.66c 370
Plain wire	4.27c	19 10 0	2.16c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.84c	12 19 0††	1 57c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 67 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	12.00
Bos. dock No. 1 exp.	12.00-12.50
New Eng. del. No. 1	13.00
Buffalo, N. 1	13.50-14.00
Buffalo, No. 2	11.50-12.00
Chicago, No. 1	14.00-14.50
Chicago, auto, no alloy	12.00-12.50
Chicago, No. 2 auto	11.00-11.50
Cincinnati, dealers	11.75-12.25
Cleveland, No. 1	12.50-13.00
Cleveland, No. 2	11.50-12.00
Detroit, No. 1	10.00-10.50
Eastern Pa., No. 1	14.50-15.00
Eastern Pa., No. 2	13.00-13.50
Federal, Ill.	11.00-11.50
Granite City, R. R.	11.50-12.00
Granite City, No. 2	10.00-10.50
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
N. Y. dock No. 1 exp.	†11.50
Pitts., No. 1 (R. R.)	16.00-16.50
Pittsburgh, No. 1	15.00-15.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	11.50-12.00
St. Louis, No. 2	10.25-10.75
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dirs. No. 1	8.00
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	11.00-11.50
Chicago, factory	13.00-13.50
Chicago, dealer	11.50-12.00
Cincinnati, del.	10.75-11.25
Cleveland	12.00-12.50
Detroit	10.75-11.25
E. Pa., new mat.	14.50-15.00
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	15.25-15.75
St. Louis	9.00- 9.50
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo, No. 1	11.50-12.00
Buffalo, No. 2	10.50-11.00
Cleveland	9.50-10.00
Los Angeles	11.00-11.50
Pittsburgh	14.00-14.50
St. Louis	6.25- 6.50
Toronto, dealers	5.00

SHEET CLIPPINGS, LOOSE

Chicago	9.50-10.00
Cincinnati, dealers	6.75- 7.25
Detroit	7.50- 8.00
†Los Angeles	3.75- 4.00
St. Louis	5.75- 6.25

BUSHELING

Buffalo, No. 1	11.50-12.00
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	3.00- 3.50
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new	8.50- 9.00
Valleys, new, No. 1	13.75-14.25
Toronto, dealers	5.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	6.50- 7.00
Chicago	6.50- 7.00
Cincinnati, dealers	4.25- 4.75
*Cleveland	7.00- 7.50
Detroit	6.00- 6.50
Eastern Pa.	8.00- 8.50
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.00- 9.50
St. Louis	4.00- 4.50
Toronto, dealers	5.00
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	8.00- 8.50
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Detroit	7.25- 7.75
Pittsburgh	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	6.50- 7.00
Cincinnati, dealers	3.75- 4.25
Cleveland	7.50- 8.00
Eastern Pa.	6.00- 6.50
Detroit	6.00- 6.50
New York	†2.50- 3.00
Pittsburgh	7.50- 8.00
Toronto, dealers	5.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.00-13.50
Eastern Pa.	10.00-10.50
St. Louis	9.00- 9.50
Toronto	6.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem.	†6.00
Bos. dist. for mills	†6.00
Buffalo	6.50- 7.00
Chicago	7.25- 7.50
Cincinnati, dealers	3.75- 4.25
Cleveland	7.50- 8.00
Detroit	6.00- 6.50
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	4.00- 4.50
Toronto, dealers	5.50

RAILROAD SPECIALTIES

Chicago	16.50-17.00

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	14.00-14.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	17.00-17.50
St. Louis	14.00-14.50

STEEL RAILS, SHORT

Birmingham	14.00
Buffalo	17.00-17.50
Chicago (3 ft.)	16.50-17.00
Chicago (2 ft.)	17.00-17.50
Cincinnati, dealers	17.50-18.00
Detroit	15.00-15.50
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	14.50-15.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.50-15.00
Cleveland	17.00-17.50
Pittsburgh	16.00-16.50
St. Louis	12.75-13.25
Seattle	16.00

FROGS, SWITCHES

Chicago	14.00-14.50
St. Louis, cut	9.00- 9.50

ARCH BARS, TRANSOMS

St. Louis	14.00-14.50

PIPE AND FLUES

Cincinnati, dealers	6.50- 7.00
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.00- 8.50
Cincinnati, dealers	7.50- 8.00
Eastern Pa.	13.50-14.00
New York	†8.50- 9.00
St. Louis	8.50- 9.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.50-10.00
Chicago, No. 1 net	9.50-10.00
Eastern Pa., No. 1	14.50-15.00
St. Louis, No. 1	9.50-10.00
St. Louis, No. 2	11.50-12.00
Toronto, No. 1 dlr.	14.00

FORGE FLASHINGS

Boston district	†7.00
Buffalo	11.00-11.50
Cleveland	11.00-11.50
Detroit	8.00- 8.50
Los Angeles	9.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pittsburgh, crops	17.00-17.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.00-17.50
Pitts. (light & hvy.)	14.50-15.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	15.50-15.75
Chicago	18.50-19.00
New York	†14.00-14.50
Eastern Pa.	17.00
St. Louis	14.50-15.00

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	16.50-17.00
Boston district	†15.00
Chicago, net	18.50-19.00
Eastern Pa.	21.50-22.50
St. Louis	16.50-17.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.00-13.50

SHAFTING

Boston district	†14.25
New York	†15.00-15.50
Eastern Pa.	19.50
St. Louis, 1¼-4¼"	17.00-17.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.50-15.00
Chicago, rolled steel	16.00-16.50
Cincin., iron, deal.	14.00-14.50
Eastern Pa., iron	16.00-16.50
Eastern Pa., steel	17.00-17.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.00-16.50
St. Louis, iron	12.50-13.00
St. Louis, steel	14.00-14.50

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†11.00-11.25
N. Eng. del. No. 2	10.50-11.00
N. Eng. del. textile	13.00-13.50
Buffalo, cupola	13.50-14.00
Buffalo, mach.	15.00-15.50
Chicago, agri. net	11.50-12.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.50-12.00
Chicago, mach. net	13.00-13.50
Cincin., mach. deal.	12.50-13.00
Cleveland, mach. net	16.00-16.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.00-14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	9.75-10.00
St. L., No. 1, mach.	13.00-13.50
St. Louis, agr. mach.	12.00-12.50
Toronto, No. 1, mach., net	10.50

HEAVY CAST

Boston dist. break.	†10.50
New England, del.	10.50-11.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, break.	9.00- 9.50
Detroit, auto net	11.00-11.50
Eastern Pa.	16.00-16.50
Los Ang., auto, net	13.00-13.50
New York, break.	†11.50-12.00
Pittsburgh, break.	13.00-13.50

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†8.00- 8.25
Buffalo	12.00-12.50
Chicago, net	10.00-10.50
Cincinnati, dealers	7.50- 8.00
Detroit, net	8.50- 9.00
Eastern Pa.	13.50-14.00
New York, fdry.	†9.00-10.00
St. Louis	7.50- 8.00
Toronto, dealers, net	7.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	16.00-16.50
Cincin., agri. deal.	12.00-12.50
Cleveland, rail	14.50-15.00
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.50-15.00
St. Louis, R. R.	12.75-13.25

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton unit, duty pd nom.	$19.00-20.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$24.50-25.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. 35.00
so. African,, 50-52%	nom. 35.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 68

Pittsburgh—Although orders continue to improve slightly in all divisions of sheet and strip production, the total quantities are still small and a substantial increase is not expected before the automotive orders begin to appear in quantity. Thus far the automotive orders have been small and in most cases are for balancing 1938 assemblies, with occasional isolated buying in small quantities for 1939 beginnings. Production continues its slow upward climb, with common sheet production now estimated at nearly 40 per cent of capacity, and galvanized at nearly 50 per cent.

Cleveland — Producers of hot and cold-rolled sheets report a continued moderate improvement in total bookings so far this month. While individual specifications remain comparatively small, there has been an increase in total number of orders. This condition indicates improvement in operations among smaller users and bears out the opinion inventories in most instances have reached bottom. Outlook for August is continued increase in demand from miscellaneous consumers and a sharp gain in buying from automotive sources in the latter part of the month to satisfy initial requirements on 1939 models.

Chicago — Production is stimulated by early automotive demands. Small tonnages have been placed for early or experimental runs on new cars, and some steel for 1939 stock cars is now being booked. Heavier ordering is not expected till later in August.

New York—Movement of galvanized material is outstanding, reflecting fair demand from the building trades, especially for heating and ventilating work. It is not up to seasonal normal, but is relatively better than the movement in most other directions. However, manufacturers of most lines of household equipment and appliances are specifying lightly, not that they have so much plain material on hand, but that fabricated stocks are still ample to meet most demands in sight. July sales were about on a parity with June.

The Mexican Oil administration has some scattered carlot inquiries out for 28-gage sheets for pitch drums and for sheets of heavier thickness (about 18-gage) for oil drums.

Philadelphia — Automobile frame and body makers have placed considerable tonnages of both hot and cold-rolled sheets, against which shipments are scheduled to start actively in about three weeks, or as soon as work on setting up dies for the 1939 cars are completed. Nearly 1000 tons of sheets are reported placed by Pennsylvania for car sides. Miscellaneous sheet requirements are running slightly ahead of July.

Buffalo — Activity in the sheet market has increased slightly following the placing of some orders from automotive manufacturers. Additional buying from this source is anticipated soon. General requirements for hot and cold-rolled material is at the best level since the latter part of last October. Jobbers also are making small purchases to balance inventories.

Cincinnati—Shipments of sheets are keeping pace with ordering at about 42 per cent of district capacity. Some automotive business is being done, but chief tonnage reliance continues to be miscellaneous needs. Galvanized is active.

Prices were reported firm to district consumers. Buying has been held to a near-term basis, none of it speculative. The rise in demand from the year's low has been broad and representative of actual consuming needs.

St. Louis — Demand for sheets, while showing slight improvement in some directions, still is quiet. Specifications on enameling stock have expanded moderately, and come principally from manufacturers of stoves and steel cabinets. Apparently warehouses are well covered, and their purchasing is confined to immediate requirements. Galvanized demand shows some betterment, with heavy corrugated roofing material moving in larger volume.

Birmingham, Ala. — Production is gaining slowly and probably is better than it has been in six or seven months with most of the increase attributable to demand for manufacturers' sheets. Some stocking by jobbers is evident in roofing.

Strip

Strip Prices, Page 69

Pittsburgh—Demand for both hot and cold-rolled strip has been somewhat better since the middle of July, although the improvement has not been as much as seen in the sheet divisions. The automotive demand is a larger factor in the strip market than in sheets, which is a partial reason for the slower increase. Production approximates 30 per cent of capacity.

Cleveland—Producers of hot and cold-rolled wide and narrow strip note a moderate improvement in specifications. The slight increase has originated from miscellaneous small consumers, who have entered the market in increasing numbers the past week for small tonnages representing actual needs. This condition has offered considerable encouragement to sellers because the wide diversification of orders indicate that inventories are no longer a barrier and any improvement in operations among these consumers should be reflected in increased mill operations. Prices are unchanged.

Chicago—Slight upturns in demand are being registered. Automotive buying is tending upward, but substantial ordering is not anticipated till the latter part of the month. Miscellaneous sources are also reported strengthening requirements as manufacturing activity slowly expends.

Boston — Improvement registered by producers of narrow cold strip has originated mostly outside New England with the automobile and accessory trade buying in slightly better volume. Low consumption of strip by many eastern fabricators curtails buying, although stocks are low in most instances. Miscellaneous buying is mildly heavier.

New York—Mild improvement in demand for narrow cold strip is noted by most sellers. Some consumers, out of the market for weeks, are placing a few releases, while others have increased the size of orders. While pressure for prompt delivery continues, consumers in more instances are allowing mills slightly more time to make deliveries, although all volume is for delivery under 30 days. A slight gain is noted in orders from the automobile trade. Prices are steady. Hot-rolled strip buying continues confined to fill-in needs.

Buffalo — Bookings for both wide and narrow width strip continue to register a moderate improvement. However, consumers are still confining purchases to requirements for immediate needs. Nevertheless mill officials are heartened as the nature of buying reveals that inventories are no longer the barriers they were a short time ago.

Birmingham, Ala. — Southern mills are shipping strip for cotton ties in considerable quantity. Production, as a result, has stepped up perceptibly, although it is doubtful, in view of crop estimates, if the demand will be as heavy as in previous seasons.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 69

Bolt, nut and rivet sales continue slow, although better inquiries are reported. Jobbers still are ordering at a fair rate and some farm imple-

ment plants are placing orders. Automotive requirements are believed due for an increase later this month. Bolt and nut prices are weak despite recent downward adjustments. Heavier business anticipated this fall is expected to have a stabilizing influence. Rivet quotations are steady.

Plates

Plate Prices, Page 68

Cleveland—Sellers of standard steel plates note little if any improvement in current requirements. Miscellaneous boiler needs and structural demand remains at a minimum. However, a slight increase in inquiries has developed, foretelling a more active market in the near future. Award of five locomotives for which the Wheeling & Lake Erie railroad has taken bids is expected soon. The Akron, Canton & Youngstown railroad will not issue inquiries for the contemplated three locomotives until early fall. Prices are unchanged.

Boston—Although keels will not be laid before November, two New England shipyards have booked additional contracts for vessels taking close to 18,000 tons, mostly hull plates. Most fabricating consumers of plates, heads and flanged material are buying sparingly in small lots. Prices are generally firm. The Bath, Me., shipyard has nine ships on the ways, or booked, the value of the contracts being $39,817,800.

New York—Plate buying is still restricted to scattered tonnages, sellers reporting little change in more than a fortnight. Tank fabricators report better inquiry and look for further expansion in August as PWA projects come up for figures. But for the past several weeks tank tonnage has been decidedly spotty. Most buying has been for construction work of other character, and there is some fair tonnage pending.

Philadelphia — District mills report little gain in plate specifications, although fall prospects are still bright since considerable ship work is in sight. Additional releases are seen shortly for C-2 boats and tanker work. Pennsylvania has placed fill-in tonnages for car program, but railroad requirements are generally restricted. Tank work continues slow.

San Francisco—One of the largest plate awards of the year has just been placed by Vancouver, B. C. and involves approximately 3000 tons for a 32 to 60-inch welded steel pipe line on which Vancouver Iron Works, Ltd., Vancouver, B. C. submitted the low bid. A fair-sized tonnage of plates and shapes will be involved in the construction of a $4,500,000 destroyer at the Bremerton navy yard, Wash., just assigned by the navy department at Washington. Demand is not heavy and awards to date this year aggregate 20,207 tons as compared with 29,442 tons for the corresponding period in 1937.

Birmingham, Ala. — Plates have shown the most consistent increase of any Southern steel product, due in large measure to business booked for Pullman for Southern railway's car order, and an increase in demand from tank manufacturers. Production is bolstered by scattered miscellaneous buying.

Seattle — Small tank and boiler work is fairly active but some large proposed projects have been postponed. Actual bookings are unimportant. Seattle light department has called bids Aug. 11 for two welded penstocks, 72-inch diameter, ⅝-inch shell, for the Ruby dam project, totaling 100 tons plates. Unstated tonnages are involved in a refinery and oil storage project at Spokane for Inland Empire Refineries Inc., a $522,000 project, general contract to Winkler-Koch Engineering Co., Wichita, Kans. Award is pending at Denver for 2700 tons of plates involved in tunnel linings for Coulee dam, bids opened July 1, and at Vancouver, B. C., 3000 tons are pending for a major water system extension.

Plate Contracts Placed

3000 tons, 32 to 60-inch welded steel pipe, Vancouver, B. C., to unnamed interest.

730 tons, three hopper barges, Marquette Cement Mfg. Co., Leetsdale, Pa., to Dravo Contracting Co., Pittsburgh.

315 tons, penstock, 13-foot diameter by 556 feet long, dam, Pittsburgh, N. H., to Walsh Holyoke Steam Boiler Works, Holyoke, Mass.; B. Perini & Son, Framingham, Mass., general contractor.

Unstated tonnage, riveted steel penstock liners, for Hiwassee power plant, Tennessee Valley authority, to Chicago Bridge & Iron Co., Chicago, at $46,324.

Plate Contracts Pending

200 tons, two 450,000 gallon tanks, Fort Devens, Mass.; Westchester Construction Co., Mt. Vernon, N. Y., low.

100 tons, two welded penstocks for Ruby dam project; bids to Seattle light department, Aug. 11.

Unstated tonnage, storage tanks, refinery tanks, etc., for Inland Empire Refineries Inc., Spokane; general contract to Winkler-Koch Engineering Co., Wichita, Kan.

Semifinished

Semifinished Prices, Page 69

Pittsburgh—Semifinished steel orders continue to improve generally as small mills build up depleted inventories. This is a large factor in the climbing production rate. Considered a healthy sign, this condition might well be the result of anticipation of sudden increases in demand when the automotive builders begin to place business. Backing up this supposition is the fact that heaviest demand in semifinished market has been for sheet bars.

Bars

Bar Prices, Page 68

Pittsburgh—Orders for steel bars have improved appreciably, with July totals than those for June, and estimates of August business showing about the same increase over July. Improvement has come from a wide variety of sources. Jobber orders have come in more frequently and in greater volume. Cold finished bar divisions are reporting comfortable increase in shipments, with July totals running about 20 per cent over June.

The outlook is optimistic for Fall. Influx of automotive orders soon will begin, and present indications are that the initial orders will be fairly large.

Cleveland—Consumption of alloy and commercial steel bars remains limited to small tonnages from miscellaneous consumers. While a slight gain in bookings is noted so far this month over the comparable period during July, no real improvement in demand is anticipated until late August, when initial requirements on 1939 automobile models will be placed with local auto partsmakers. A moderate increase in specifications from road equipment concerns has developed lately. Mill operations are substantially unchanged.

Chicago — Sales of commercial bars have shown fair improvement with some major producers estimating a 15 per cent increase for the past month. Demand has improved from widely diversified sources.

Boston — Business in soft steel, alloy and forging steel bars is limited to fill-in buying of sizes and grades on which some consumers are running low. Consumption remains light. Indications of an early improvement in demand for cold finished material by the textile machinery industry are encouraging. Numerous textile mills in New England are operating at a high rate, and, with considerable equipment in need of replacement, sustained production should naturally be reflected in a better demand for replacements. Inventories held by most bar consumers are running low, but curtailed consumption re-

tards buying, although small-lot buying is slightly heavier. Jobbers are following the policy of industrial users, buying for needed stock only.

New York—Bar specifications from aircraft builders and from builders of concrete mixers and road machinery continue brisk. They involve principally cold-drawn and special analysis steels. Automobile accessory requirements are expected to gain early this fall. Jobbers are making replacements slowly, and whereas a few weeks ago many were talking buying early in August, they are now talking about September. Machine tool specifications, which pass principally through jobbers, have taken little turn, although some fair export buying of machinery is noted. Railroad demand is virtually nil.

Philadelphia — Cold-drawn bar specifications are coming out more actively in several directions, including screw machine products and textile machinery. August is shaping up to be the best month this year for some cold-drawn producers. Hot-rolled bars are moving slightly better, but are relatively less active than cold-rolled. Jones & Laughlin Steel Corp. is low at 3.12 on 205 tons of 2¾-inch S. A. E.-X1335 bars for Frankford arsenal.

Buffalo — Sales show a slight increase as more activity is noted in deformed bars for reinforcing structural purposes. Minor expansion also is reported in inquiries from automotive sources. It is believed the pickup in orders from auto makers was due to a winding up of production to fill belated buying of current models. Rolling operations of mills are maintained at the recently improved level.

Birmingham, Ala. — Except for concrete bars, buying has been below expectations. Demand for concrete bars, however, is consistently good and there are indications manufacturers of agricultural implements will start buying soon.

Pipe

Pipe Prices, Page 69

Pittsburgh — Market on practically all grades of pipe remains spotty. Shipments are better, following the trend established in mid-July. A fair tonnage of oil country goods still is moving to the Houston and Memphis warehouses. Mill stocks have now been pretty generally established at the two points and further movement will probably reflect orders more closely. The price situation remains unchanged.

Cleveland—Jobbers of standard steel pipe note little change in current requirements from industrial sources. Inventories among most distributors are ample to satisfy needs through August. However, some jobbers anticipate a moderate improvement in stock turnover within the next few weeks, reflecting increased demand from industrial sources. Award is expected soon on a waterworks project at Mentor, O., and bids will be called soon on a similar project at Lake Morne, O. Prices remain firm.

Chicago—Pipe market is dull. Demand for cast iron pipe is reported even quieter. Numerous projects are believed holding off ordering pending granting of government funds.

Chicago — Inquiries and orders for cast iron pipe are light. Demands from miscellaneous sources still dot the market but large tonnages are scarce. Ordering of pipe for numerous municipal projects is believed being held off pending the reception of more government funds.

New York—Pipe awards are only fair. Sellers particularly feel the continued lack of public utility de-

heavy Welding
TAKE a close look at the Smith expert welders at work—welding a section of a 36'-6" speed ring.
If you have heavy and complicated welding jobs, put your next one up to us. Profit by our experience and workmanship that never compromises with our highly-developed standard!
by
S. MORGAN SMITH
YORK, PA.

Behind the Scenes with STEEL

Fore!

■ The Cleveland Open Golf Tournament which gets under way this week boasts of $10,000 in prizes and an entry list of golfing's great, including Ralph Guldahl, Sammy Snead and Paul Runyan. Closely rivaling this great new tourney is the annual Penton Open which is slated for this coming Saturday. The highly coveted Penton Cup, last year won by hard-hitting, handsome Bob Wellman of *The Foundry*, will again be what the boys shoot for. Wellman has plenty of rivals this year, with Joe Sullivan of STEEL's editorial staff leading the contenders. Advertising salesman Russ Jaenke will be out there plugging with his long iron shots and such unpredictables as business manager George Hays or editor-in-chief Earl Shaner may crash through with a hot round. If you want to place a little money on your favorite editor, send it along and we'll get you the best odds possible.

Good Stuff

■ And down in Youngstown we learn of another company affair which long since became "traditional", and which is an excellent example of promoting employe relations. For 21 years General Fireproofing has had an annual picnic which now brings out between six and seven thousand people for a full day of fun. GF's up-and-at 'em adv. agcy., Herman & Co., follows up with a 16-page issue of the *GF News* jam-packed with candid photos of every description. It is the best and most interesting job we've ever seen and we'll bet every red penny put into the affair pays off big dividends. If you have any such affairs and would like to have a copy of this booklet let us know and we'll see that you get one.

New Trends

■ STEEL, you know, long ago initiated The Business Trend as an essential service to its readers. No particular effort is made to compete with the many expensive services available but we hear so often that it is worth far more than the subscription price that we fear we do steal some of their economic thunder. With business on the anxious seat now, waiting for that new corner, a new series of charts gives you the picture of the entire metalworking field easily and quickly. Take a squint at page 35 and you'll see that things are looking up.

Free Advice

■ A salesman friend of ours gave us a letter from his sales manager that strikes us as being a whale of a lot of good advice in one short page. If you have some salesmen of your own to worry about or if you have salesmen call on you, you should find this just as interesting as we did. We'll be glad to send you a copy if you just post card us—"please".

Hang Your Stocking

■ After a week of sweltering, sweating and swearing we agree with Cliff Sayre of Harbison-Walker's Buffalo office that this is no time to be talking about Santa Claus. It seems that Western Union has broken all previous records by starting in July to push their Xmas message business with a brochure on "Christmas Goodwill Land". It lists all of those scintillating form messages which sound silly enough at the appropriate time and which make you want to tear your hair as your tie fades deliciously on your wilted collar. We still haven't exchanged a couple of things from last year but we're not going to let Western Union outdo us. We're going over to John White's bar this noon and while all the boys gulp down cold suds and wipe their brow we'll insist that we want a steaming hot Tom & Jerry since there are only 119 more shopping days until Christmas.

—SHRDLU

mand. Resale price situation remains unsettled. Notwithstanding reduction in mill prices recently, some jobbers are still underselling. Trade leaders believe only a sharp increase in tonnage will relieve the situation. Approximately 375 tons of 36 and 48-inch steel pipe will be required for the Jerome avenue project, bids on which were opened Aug. 5. A modest tonnage of cast pipe and fittings will be needed for the same job. A substantial tonnage of steel pipe is pending for the Delaware aqueduct project on which Associated Contractors Inc., Long Island City, are low, and a fair tonnage will be sublet for piling by P. T. Cox, general contractor, on construction at Canal street in connection with the West Side elevated highway.

Birmingham, Ala. — Most Southern pipe business is coming from small and scattered sources. Plants have eased off since completing some WPA lettings and generally believe it will be 60 to 90 days before PWA business hits its stride. Yard stocks have been lowered.

San Francisco — Little or no improvement is noted in the cast iron pipe market and pending business does not exceed 900 tons. Only large award of the week went to United States Pipe & Foundry Co. and involved 128 tons of 6-inch pipe for the treasury department, San Francisco. Bids have just been opened on 319 tons of 6-inch pipe for San Francisco and on 185 tons of 4 to 12-inch pipe for San Bernardino, Calif. No award has yet been made on 122 tons of 8 and 12-inch pipe for Spokane, Wash. Awards totaled 335 tons, bringing the year's aggregate to 18,364 tons, compared with 18,335 tons for the same period a year ago.

Seattle — Many water system projects are planned but no important jobs are up for figures. Pacific States Cast Iron Pipe Co., Provo, Utah, has been awarded 275 tons of 6-inch cast iron for Spokane, Wash., and is reported low for an additional 150 tons of 8 and 12-inch for the same buyer. H. G. Purcell, Seattle, has award for small lot for Ellensburg, Wash., disposal plant, and Pacific Water Works Supply Co., Seattle, will furnish gate valves for the same project. La Grande, Oreg., will ask PWA aid for proposed $176,000 project involving six miles of new cast iron pipe. Both Seattle and Spokane are seeking federal aid for major water system projects, the former $586,000 and Spokane a total of $784,000.

Cast Pipe Placed

128 tons, 6-inch, class 150, treasury department, invitation 5754, San Fran-

cisco, to United States Pipe & Foundry Co., Burlington, N. J.
125 tons, 12-inch, cement-lined, class 150, Newburyport, Mass., through state procurement office, treasury department, Boston, to Warren Pipe Co., Everett, Mass.; same foundry also awarded close to 100 tons, 6-inch, for Mansfield, Mass., placed through Boston office.

Cast Pipe Pending

185 tons, 2 to 12-inch, San Bernardino, Calif.; bids opened.
150 tons, 8 and 12-inch, Spokane, Wash.; Pacific States Cast Iron Pipe Co., Provo, Utah, low.

Wire

Wire Prices, Page 69

Pittsburgh — Wire and wire products have not reflected as much increase as the heavier products. Movement in merchant wire is slow and lighter. However, inquiries have improved and it is believed there will begin a more or less steady climb this fall. Agricultural demand is less, and jobber buying is still spotty. Manufacturers' wire divisions report somewhat better orders, reflecting the general upswing in business, but the volume is at best unsatisfactory. Automotive placements have not yet appeared in volume. August tonnage is expected to run close to July totals, which showed a slight improvement over the previous month.

Cleveland—Demand for manufacturers' wire has registered a slight improvement recently, due primarily to increased activity among local automotive suppliers. Still further gains are anticipated throughout the month as automobile producers increase specifications for parts on 1939 models. Requirements for merchant items remain substantially unchanged at the low levels during the latter part of July. The mild improvement in bookings to-date this month has not yet been reflected in increased operations at the mills. Lower prices has failed to stimulate buying from jobbers and miscellaneous customers as originally anticipated. However, inventories are said to be at low levels in most instances and any improvement in operations should be immediately reflected in increased demand at the mills.

Boston—Improvement in wire buying, centered mostly in a few specialties and manufacturers' wire, has not been sufficient to materially lift finishing mill operations. Nevertheless better sentiment has resulted in a moderate pick-up in new business from some districts outside New England. Some volume is being placed traceable to the automobile industry. Machine screw product consumers are buying sparingly due to relatively high inventories based on current low rate of consumption. Despite low consumption, however, some such shops are short of some wire sizes, but are well stocked with others. With even a near-normal rate of operations inventories held by screw machine product shops would be considered low. Rod business is slack; also rope and heavier wire goods. Considerable foreign wire rope is finding a market in this district at prices far under domestic quotations.

New York—From miscellaneous consumers, wire buying has improved slightly. Better tonnage is also trickling in from the automotive industry, accessory makers placing fair orders for immediate shipment. Manufacturers' wire has registered mild gains, also some specialties and spring wire. Demand for wire rods continues sluggish, while heavier goods, rope and cable are dull.

Birmingham, Ala. — Wire products are in fair demand and show little change. Some restocking is in evidence on the part of dealers and jobbers and shipments are described as "fair."

Rails, Cars

Track Material Prices, Page 69

Domestic freight car buying in July was nil, no cars of standard commercial type being reported placed. Hence, the total for the first seven months is 8021 cars, the same as for the first six months. This is the first time since March, 1935, that no such orders were reported. Comparisons follow:

	1938	1937	1936	1935
Jan.	25	17,806	2,050	24
Feb.	109	4,972	6,900	806
March....	680	8,155	632	0
April.....	15	9,772	4,427	350
May.....	6,014	4,732	8,900	2
June	1,178	548	5,200	5,151
July.....	1,008	1,030	7,229	500
7 mos....	8,021	47,108	35,338	6,833
Aug.	.....	1,475	225	200
Sept.	.....	1,216	1,750	875
Oct.	.....	1,355	2,210	1,250
Nov.	.....	275	1,550	100
Dec.	.....	275	23,450	10,050
Total .	.....	51,611	64,643	19,308

The a.c.f. Motors Co., New York, has booked 11 motor coaches: Five for Montreal Tramways, Montreal, Canada; two, Oahu Railway & Land Co., Honolulu, Hawaii; one, Oakdale Community Garage & Bus Line, Dedham, Mass.; and three, Union Bus Co., Jacksonville, Fla.

Car Orders Placed

Southern railway, 153 freight cars, as follows: 95 high side gondolas to American Car & Foundry Co., New

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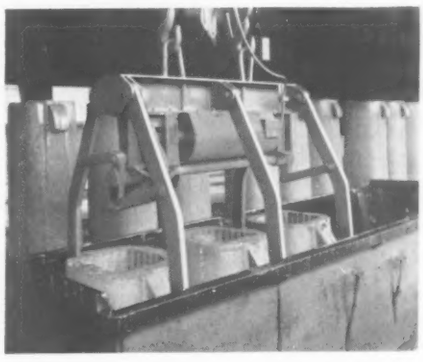

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York; 23 box cars to Pullman-Standard Car Mfg. Co., Chicago; 20 box cars to Mt. Vernon Car Mfg. Co., Mt. Vernon, N. Y.; 11 low side gondolas to Pressed Steel Car Co., Pittsburgh; 3 stock cars to Ralston Steel Car Co., Columbus, O.; and one flat car to Greenville Car Co., Greenville, Pa.

Shapes

Structural Shape Prices, Page 68

New York—Structural awards approximate 15,000 tons in the New York city area, including 7000 tons, two subway sections, Brooklyn, and 5400 tons, steel superstructures, Lincoln tunnel approach, North Bergen, N. J. The latter goes to American Bridge Co., Pittsburgh, at $740,610. The bid, July 19 to the Port of New York authority, was 6.50c on 9,000,000 pounds, carbon and copper-bearing steel in place; 5.94c on 1,500,000 pounds, silicon steel in place, and 16.41c on 300,000 pounds, forged and cast steel. For field painting of the 10,800,000 pounds involved a total of $17,280 was bid as low by the Pittsburgh fabricator. But two other fabricators estimated this project, Bethlehem Steel Co., Bethlehem, Pa., second, $778,200, and Harris Structural Steel Co., Inc., New York, $798,915, third. New inquiry, which is mounting due to releases on public work projects, also includes 1560 tons for New York state bridges, closing Aug. 9 and 16.

Pittsburgh—Strength is still evidenced with inquiries and orders continuing to come out in much better volume. Out of a recent collection of about 30 new projects, however only seven were privately sponsored, the balance being on public projects.

Cleveland — Structural requirements from private channels remain substantially unchanged from the June level, with but a slight increase in the number of small projects noted. Hunkin-Conkey Construction Co., Cleveland, have been awarded the general contract on 1337 tons of structural and 550 tons of bars for the Cloverleaf development near Brecksville, D. Sam W. Emerson Co., Cleveland, is low on the general contract for the east approach to the Main street bridge, Cleveland, involving approximately 1900 tons of structurals.

Chicago — Bookings for structural shapes are improved with known awards considerably heavier than usual. Structural inquiry is not especially heavy but involves a fair number of jobs over 100 tons.

Boston — Heavier inquiry for bridge requirements features structural demand in New England. Although most are beam spans or stringer structures one, the Badger Island bridge, Kittery, Me., closing Aug. 17, takes 555 tons, superstructure. Vermont closes Aug. 15 and 17 on five beam spans taking better than 200 tons while Rhode Island closes Aug. 8 on two beam spans, Cranston and East Providence, R. I., 135 tons. After months of deadlocks between the Massachusetts legislature and governor as to financing of public works, a truce has released considerable work, including bridges at several points in this state. Awards are light, but more public work is appearing with pending tonnage substantially heavier. Close to 315 tons has been placed with a Manchester, N. H., fabricator for an armory that city.

Philadelphia — Structural fabricators expect to start figuring actively on PWA-financed program in September, with work reaching the rolling stage in November. In the meantime, a number of smaller jobs are coming out, mostly of a public character. Some private work also is appearing, including a 150-ton machine building for the Scott Paper Co., Chester, Pa. Prices are somewhat on the weak side.

Buffalo — Outlook for the structural market offers much encouragement to fabricators here. A few small private jobs are mingled with many WPA projects, which should keep the shape market active for some time. The Buffalo city council has under consideration a WPA building program, which if approved, would mean a spending of approximately $6,000,000. Federal grants would only cover part of the costs and it is expected the complete program will amount to roughly $10,000,000.

St. Louis — The structural steel situation has improved moderately during the past week or ten days. While jobs placed are still small individually, they are more numerous and aggregate tonnage makes a creditable showing. On Aug. 11 the board of supervisors of St. Clail county at Belleville, Ill., will open bids on a bridge across the Mississippi between St. Louis and East St. Louis. Project calls for 14,085 tons of structural shapes, including 4500 tons of silicon steel and 1215 tons of reinforcing concrete bars. The structure will be 8063 feet long, will cost about $5,000,000, and is the largest steel project undertaken here in a number of years.

Seattle—Construction projects at the Puget Sound navy yard involve to date 1864 tons of shapes, bids for

Shape Awards Compared

	Tons
Week ended Aug. 6	**28,697**
Week ended July 30	**12,375**
Week ended July 23	**16,648**
This week, 1937	**13,213**
Weekly average, year, 1937	**23,251**
Weekly average, 1938	**16,368**
Weekly average, July	**13,886**
Total to date, 1937	**830,247**
Total to date, 1938	**523,781**

Includes awards of 100 tons or more.

1106 tons of which are actively pending. For a building extension, tenders will be received for 363 tons Aug. 9 and on Aug. 12 for 395 tons for a covered storage shed. Eastern bidders have the advantage because of the land grant rail rates. Four hundred and fifty tons are pending for Washington state highway projects, general contracts awarded.

San Francisco — While new inquiries and pending business exceeds 15,000 tons, awards were not particularly heavy and totaled less than 1400 tons. This brought the total for the year to 73,065 tons, compared with 115,572 tons for the same period last year. Pittsburgh-Des Moines Steel Co. obtained 250 tons for a hangar extension at Coco Solo, C. Z. and Herrick Iron Works booked 180 tons for a crossing at Colfax, Calif. Unnamed interests booked 277 tons for a crossing at Maplewood, King county, Washington, and 100 tons for a crossing at Brusg, Morgan county Colo. Bids open on Aug. 23 for 1192 tons, including 156 tons of machinery, for the High street bridge, Oakland, Calif., on Aug. 9 for 363 tons for the extension of building No. 368, navy yard, Bremerton, Wash. and on Aug. 12 for a steel storage warehouse for the same yard, calling for 395 tons. Bids open on Aug. 19 for 211 tons for a bridge over the Russian river, Sonoma county, California, for the state.

Shape Contracts Placed

7000 tons, subway sections 7 and 8, Brooklyn, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; through George H. Flinn Corp., New York, general contractor.

5400 tons, superstructure, Lincoln tunnel approach, North Bergen, N. J., to American Bridge Co., Pittsburgh.

2225 tons, grade separation over Chicago, Burlington & Quincy railroad tracks at Ogden and Cicero avenues, Chicago; 1825 tons to American Bridge Co., Pittsburgh; 400 tons to Wisconsin Bridge & Iron Co., Milwaukee.

2000 tons, state highway bridge, Davidson, Okla., to Virginia Bridge Co., Roanoke, Va.

1500 tons, hangar, Hickman Field, Honolulu, T. H., to Minneapolis-Moline Power Implement Co.

1250 tons, bridge over Green river, Munfordsville, Ky., to Nashville Bridge Co.

1025 tons, garage, New York City, Omnibus Co., 721 Lenox avenue, New York, to Bethlehem Steel Co., Bethlehem, Pa.

875 tons, bridge FAP-21C, McIntosh and Pittsbury counties, Oklahoma, to Muskogee Iron Works, Muskogee, Okla.

795 tons, field house, Virginia, Minn., to Wisconsin Bridge & Iron Co., Milwaukee.

582 tons, Washington street subway, Indianapolis, to Bethlehem Steel Co., Bethlehem, Pa.

500 tons, Santa Fe coach and diesel shop, Chicago, to American Bridge Co., Pittsburgh.

450 tons, bridge, Major Deegan boulevard, 135th street, Bronx, N. Y., to American Bridge Co.; Wilson & English Co., New York, general contractor; bids July 8, president, borough of Bronx.

415 tons, bridge No. 320.4, Rock Island lines, Pond Creek, Okla., to American Bridge Co., Pittsburgh.

385 tons, Winnemas Garden apartments, Chicago, to Reuter Bros., Chicago.

385 tons, bridge, Blue, Bryan county, Oklahoma, to J. B. Kline Iron & Foundry Co., Oklahoma City, Okla.

285 tons, steel sheet piling, bureau of reclamation, delivery, Calexico, Calif., to Inland Steel Co., Chicago, $9031.18, f.o.b. Calexico, bids July 6, schedule B-42,086-A; schedule B-42,081-A, bids July 8, to Carnegie-Illinois Steel Corp., Pittsburgh, $8061.05 f.o.b., Knob, Calif.

285 tons, Indiana bridge, to Bethlehem Steel Co., Bethlehem, Pa.

265 tons, Y. M. C. A., Auburn, N. Y., to Genessee Bridge Co., Rochester, N. Y.

260 tons, Matanuska river bridge, Alaska, to Duffin Iron Works, Chicago.

250 tons, hangar extension, specification 7993, Coco Solo, C. Z., to Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

250 tons, bridge, Greenwood, Ky., to Midland Structural Steel Co.

240 tons, bridge, Cass and Pottawattamie counties, Griswold, Iowa, to Des Moines Steel Co., Des Moine, Iowa.

240 tons, structural supports, for Sun Oil Co., Chester, Pa., to Belmont Iron Works, Eddystone, Pa.

215 tons, bridge, Gould, Mich., to American Bridge Co., Pittsburgh.

210 tons, rehabilitation of Tenth street bridge, New Brighton, Pa., for Beaver county, Pennsylvania, to Keystone Engineering Co.

180 tons, crossing at Colfax, Placer county, California, for state, to Herrick Iron Works, Oakland, Calif.

175 tons, North river bridge, St. Augustine, Fla., to Bethlehem Steel Co., Bethlehem, Pa.

175 tons, gymnasium building, St. Joseph Bohemian orphanage, Lisle, Ill., to New City Iron Works, Chicago.

170 tons, bridge No. 5211-13-Cl, Floodwood, Mich., to American Bridge Co., Pittsburgh.

150 tons, building 9-B, Aluminum Co. of America, New Kensington, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

120 tons, gymnasium, Lisle, Ill., to New City Iron Works, Chicago.

115 tons, machine shop, Proctor & Gamble Co., Cincinnati, to R. C. Mahon Co., Detroit.

110 tons, bridge, Allegheny county, Pennsylvania, to American Bridge Co., Pittsburgh.

110 tons, factory building, Globe Slicing Machine Co., Stamford, Conn., to Belmont Iron Works, Eddystone, Pa.

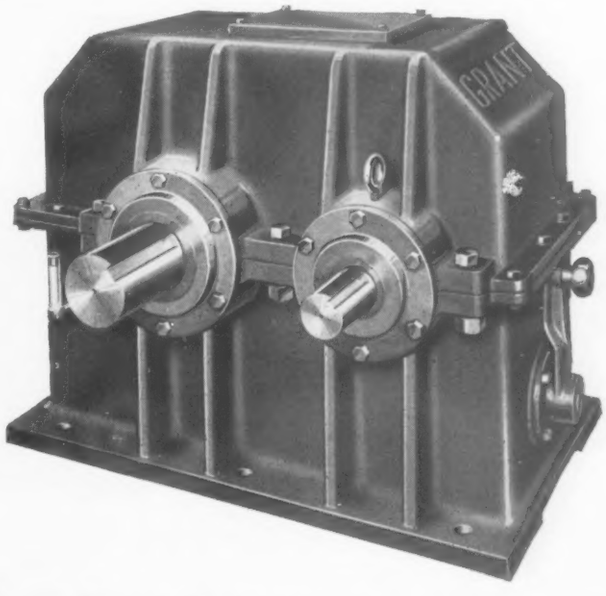
105 tons, railroad underpass, Brush, Morgan county, Colorado, to American Bridge Co., Pittsburgh.

Shape Contracts Pending

2700 tons, three air corps hangars, Chanute field, Rantour, Ill.; bids in.

1900 tons, east approach to Main street bridge, Cleveland; Sam W. Emerson, Cleveland, low on general contract.

1400 tons, addition to state office build-



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GRANT GEAR WORKS—Boston

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ing, Madison, Wis.; bids in Aug. 18.

1337 tons, cloverleaf development, near Brecksville, O.; Hunkin-Conkey Construction Co., Cleveland, general contractor, also includes 550 tons of bars.

1350 tons, Ferry street bridge, New Haven, Conn.

1192 tons, including 156 tons machinery, High street bridge, Oakland, Calif.; bids Aug. 23.

1100 tons, extension to overhaul shop, naval air station, for U. S. navy department, Norfolk, Va.

800 tons, U. S. war department stable, Fort Bliss, Tex.

760 tons, bridge, Westmoreland county, Pennsylvania; bids to highway department Aug. 12.

700 tons, state highway bridge, Rensselaer county, New York; bids Aug. 9, state highway department, Albany.

700 tons, girder spans, Chicago; bids to local improvements, Chicago.

655 tons, bridge, Sequin, Tex.

650 tons, four 75-foot spans carrying Grand Trunk and Indiana Harbor Belt lines over Ashland avenue, Chicago; closing Aug. 8.

600 tons, factory and office building, Carboloy Co. Inc., Detroit.

555 tons, steel superstructure, Badger Island bridge, Piscataqua river, Kittery, York county, Maine, federal aid project 83-B, bids Aug. 17, state highway commission, Augusta. Concrete portion and substructure closing same date, requires 1400 linear feet steel piles; 49 tons structural steel; 39,000 pounds wrought iron for piers, and 1150 linear feet wrought iron railing.

550 tons, U. S. war department powder magazine, Savanah, Ill.; letting Aug. 1.

540 tons, state highway bridge, Monroe county, New York; bids Aug. 16, state highway department, Albany.

500 tons, administration building, normal school, Brookport, N. Y.; bids Aug. 18.

400 tons, bridge, Livingstone, Tex.

395 tons, covered steel storage shed, Puget Sound navy yard; bids Aug. 12.

363 tons, extension to building 368, Puget Sound navy yard; bids Aug. 9.

320 tons, state highway bridge, Broome county, New York; bids Aug. 9, state highway department, Albany.

300 tons, mill building, Wood River, Ill., for Union Tank Car Co.

300 tons, repairs to mess hall, Bancroft, Hall, U. S. Navy Academy, Annapolis, Md.

290 tons, undercrossing, Washington county, Iowa.

275 tons, eight bridges, in Missouri and Kansas, for Missouri & Kansas railroad.

250 tons, nurses home, Jewish hospital, Philadelphia; bids Aug. 24.

230 tons, Missouri Pacific railway bridge, Kansas.

211 tons, Russian river bridge, Sonoma county, California, for state; bids Aug. 19.

200 tons, temporary bridge over canal, South Western avenue and Thirty-first street, Chicago.

200 tons, radial gates, etc., Central Nebraska Public Power & Irrigation district, North Platte, Nebr.

200 tons, beam span bridges, Guilford, Brookline, Fair Haven, Pawlet, Woodstock and Tinmouth, Vt.; bids Aug. 15 and 17 to selectment of towns named.

175 tons, 3-story courthouse, Waltham, Mass., D'Amore Construction Co., Boston, low on general contract.

150 tons, machine building, Scott Paper Co., Chester, Pa.

150 tons, grade school, Trenton, Pa.; bids Aug. 11.

150 tons, garages and office building, state highway department, Norristown, Pa.; bids Aug. 17.

150 tons, steel stringer bridges over railroads, Lowell-Tewksbury and Montague-Sunderland, Mass.; bids Aug. 16, federal aid projects, to G. H. Delano, chief engineer, state highway department, Boston.

150 tons, north approach, Highland Park bridge, Pittsburgh.

145 tons, beam bridge, U. S. treasury department, Wallington, Conn.

140 tons, gymnasium building, Oberlin college, Oberlin, O.

139 tons, magazine buildings, Puget Sound navy yard; bids in July 29.

135 tons, beam span bridges, Cranston and East Providence, R. I.; bids Aug. 6, state highway department, Providence.

120 tons, gymnasium building, New York Catholic protectory, Lincolndale, N. Y.

115 tons, rehabilitation bridge, Washington and Westmoreland counties, Donora, Pa.

100 tons, Temple University hospital, Philadelphia; bids Aug. 10.

100 tons, sheet steel piling, Ketchikan, Alaska, federal building bulkhead; Warrack Construction Co., Seattle, low.

Reinforcing

Reinforcing Bar Prices, Page 69

New York—Including 1300 tons, substructure, Meeker avenue bridge, Brooklyn, reinforcing bar contracts approximate 2500 tons, including small lots, with inquiry slightly heavier. Highway requirements for New York state, both bars and mesh, are more active. Two bridges, 320 tons, Fairfield and Trumbull, Conn., have been withdrawn for bids temporarily and will be readvertised later. Prices on billet steel bars for concrete reinforcing are still erratic.

Pittsburgh — Tonnage is fairly good, and new projects numerous. Several new jobs have been announced recently involving substantial tonnages, although most are public projects. Prices are weak.

Cleveland—Reinforcing bar requirements from private sources in Northern Ohio for which estimates were requested, totaled 693 tons in July, compared with 372 tons in the preceding month and 744 tons in May. Comparable figures on joists were 190 tons in July, 112 in June, and 67 in May. New inquiries are confined to small tonnages from private channels. Approximately 550 tons involved in the Cloverleaf development near Brecksville, O., is still pending; Hunkin-Conkey Construction Co., Cleveland, is low on the general contract for the construction of four bridges.

Chicago — Government projects in the offing help bolster concrete

Concrete Bars Compared

	Tons
Week ended Aug. 6	9,416
Week ended July 30	6,753
Week ended July 23	12,278
This week, 1937	7,310
Weekly average, year, 1937	6,061
Weekly average, 1938	6,308
Weekly average, July	10,498
Total to date, 1937	187,683
Total to date, 1938	201,854

Includes awards of 100 tons or more.

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reinforcing steel market, although private construction shows no signs of immediate improvement. Bookings for July improved over June and August sales of bars are expected to exceed July figures. Some producers predict improvement will be shown monthly until the end of the year. About 30 miles of paving in Iowa will require 1055 tons, bids Aug. 2. Six projects are involved and J. S. McLaughlin & Sons Co., Des Moines, Iowa, is reported low bidder on the bulk of the work, estimated at 550 tons, or 14 miles of paving.

Boston — Reinforcing steel contracts are more numerous, but limited mostly to small lots, total tonnage placed in the New England district approximating 500 tons, including a nurses' home, Newton, Mass., and a state office building, Concord, N. H., 220 tons to Joseph T. Ryerson & Son Inc., Boston. Pending volume is estimated at 4000 tons, including several hospital structures, Connecticut bridges, Rhode Island highway work and slightly heavier bridge and road work in other northeastern states. Although still erratic, concrete bar prices are somewhat steadier. In Connecticut, however, quotations are still sagging, meeting competition with New York sellers.

Philadelphia — Concrete bar fabricators expect material improvement as a result of PWA spending, but at present shops are none too active. Some miscellaneous work is coming out, but this generally involves small tonnages.

San Francisco—Of special importance was the award by the United States engineer's office, Los Angeles, of 4067 tons of reinforcing bars to Columbia Steel Co. Bethlehem Steel Co. obtained 369 tons for the bureau of reclamation for delivery at Knob, Calif. and Youngstown Sheet & Tube Co. booked 104 tons for delivery at Parco, Wyo. Truscon Steel Co. took 128 tons for a bridge over the San Joaquin river, Merced county, Calif., and Gilmore Steel & Supply Co. were awarded 127 tons for the Cache Creek bridge in Yolo county, Calif. The bureau of reclamation has just opened bids on 872 tons and 278 tons for delivery at Calexico, Calif., on 222 tons for delivery at Ignacio, Colo. and on 116 tons for delivery at Mills, Wyo. Bids open on Aug. 23 for 530 tons for the High street bridge, Oakland, Calif. Awards aggregated 6030 tons and brought the total for the year to 72,002 tons as compared with 52,354 tons for the corresponding period in 1937.

Seattle—Market is slightly more active, increase in small tonnages being noticeable. Meanwhile large projects are lacking but the indications are for a marked improvement within 60 days. Bids were opened at Denver, Aug. 5, for 790 tons involved in the Roza, Wash., reclamation dam. The same bureau is considering tenders for 500 tons, opened recently, at Boise, Idaho, for the Black Canyon and Owyhee projects.

Reinforcing Steel Awards

4067 tons, United States Engineer office, proposal 30, Los Angeles, to Columbia Steel Co., San Francisco.
1300 tons, substructure, Meeker avenue bridge, Newtown creek, Brooklyn, to Igoe Bros., Newark, N. J.; Reiss & Weinsier Inc., Brooklyn, general contractor.
1000 tons, Pennsylvania avenue bridge over Anacostia river, Washington, to Bethlehem Steel Co., Bethlehem, Pa.
600 tons, building, Boston University, Boston, to Bethlehem Steel Co., Bethlehem, Pa.; Turner Construction Co., Boston, general contractor.
450 tons, "Hayden Memorial" business administration building, Boston University, Boston, to Bethlehem Steel Co., Bethlehem, Pa.
369 tons, bureau of reclamation, invitation B-42,085-A, Knob, Calif., to Bethlehem Steel Co., Bethlehem, Pa.
250 tons, Timken vocational high school building, Canton, O., to Pollak Steel Co., Cincinnati.
220 tons, state office building, Concord, N. H., to Joseph T. Ryerson & Son Inc., Boston, through E. J. Pinney & Co., Springfield, Mass. general contractor; and nurses' home, Newton, Mass., Turner Construction Co., Boston, general contractor.
164 tons, three bridges in Los Angeles County, California, for state, to unnamed interest.
161 tons, Santiago Creek bridge, San Bernardino county, California, for state, to unnamed interest.
150 tons, Washington state highway spans, to Bethlehem Steel Co., Seattle.
128 tons, San Joaquin river bridge, Merced county, California, for state, to Truscon Steel Co., San Francisco.
127 tons, Cache creek bridge, Yolo county, California, for state, to Gilmore Steel & Supply Co., San Francisco.
124 tons, Santa Ana river bridge, San Bernardino county, California, for state, to unnamed interest.
104 tons, bureau of reclamation, invitation A-22,360-A, Parco, Wyo., to Youngstown Sheet & Tube Co., Youngstown, O.
102 tons, highway work in Los Angeles and in Orange county, California, for state, to unnamed interests.
100 tons, Keawe-Wailuku bridge, Hilo, T. H., to unnamed interest.

Reinforcing Steel Pending

1000 tons, U. S. veterans administration building, Ft. Knox, Ky.
530 tons, High street bridge, Oakland, Calif.; bids Aug. 23.
300 tons, Bankers Life building, Des Moines, Iowa.
278 tons, bureau of reclamation, invitation B-42,101-A, Calexico, Calif.; bids opened.
222 tons, bureau of reclamation, invitation 32,060-A, Ignacio, Colo.; bids opened.
210 tons, Westmoreland county bridges, Pennsylvania.
200 tons, male dormitory barracks building No. 78, Bath, N. Y., veteran administration, United States; bids Aug. 9.
200 tons, Benjamin Banneker Junior high school, Washington.
175 tons, overpass, S. A. L. tracks, Portsmouth, Va.
166 tons, two cottages, Sonoma State hospital, Eldridge, Calif.; bids being taken.
165 tons, dam, Geauga county, Ohio.
150 tons, nurses' quarters, veterans' hospital, White River Junction, Vt.; W. H. Trumbull, Hanover, N. H., low on general contract.
147 tons, highway work in Mendocino, Mariposa and Sierra county, California, for state; bids Aug. 17.
125 tons, administration building, nor-

THE HANNA FURNACE CORPORATION
MERCHANT PIG IRON DIVISION OF NATIONAL STEEL CORPORATION
Buffalo Detroit New York Philadelphia Boston

mal school, Brockport, N. Y.; bids Aug. 18.
125 tons, sewage disposal plant, Niles, Mich.
116 tons, bureau of reclamation, invitation A-27,353-A, Mills, Wyo.; bids opened.
110 tons, C. R. I. & P. railroad underpass, Washington, county, Iowa.
100 tons, grade crossing elimination, Rensselaer, N. Y.
100 tons, improvement College street, Los Angeles; bids Aug. 17.

Pig Iron

Pig Iron Prices, Page 70

Pittsburgh — July pig iron production increased over June, largely due to a substantial increase by one large producer. Prospects for August are brighter. Shipments are slightly improved, although foundry activity is showing slight improvement. The coke market is somewhat more active, responding to an increase in iron production at several furnaces.

Chicago — Pig iron shipments during July were approximately 40 per cent above June. Buying has subsided recently as consumers are now fairly well covered for the quarter, but daily sales are continuing at a fair rate. Foundries are sending in more releases and renewed activity at numerous steel plants in the midwest accounts for improvement in shippings.

Cleveland—Pig iron sellers report moderate improvement in releases against current contracts, due principally to increased activity among automotive foundries in preparation of parts for 1939 models. One producer predicts shipments during August will increase 25 per cent over the July level. Figures for the same producer during July showed an increase of 50 per cent over June. No substantial improvement in operations among merchant producers is anticipated in the near future, for present inventories plus current rate of operations are ample to satisfy the anticipated needs throughout August.

Boston — Following slight improvement in small-lot spot buying and better releases against old contracts, pig iron demand has slumped to routine needs by consumers operating on a hand-to-mouth basis. Although sentiment has improved and in some instances foundry operations have stepped up, the pickup has not been sufficient to reflect materially better buying of raw materials. Not only pig iron, but foundry coke releases are slack. Some users, in position to do so, have bought cautiously against a possible price advance this quarter, but such tonnage has been small. Considerable foreign inquiry has appeared, but at prices too low to interest.

Philadelphia — Buying shows little change. Buyers apparently are not influenced by continued talk of higher prices and still are gearing purchases to requirements which are not expanding as yet. An independent district merchant interest has started rehabilitation of its stack but does not plan to put it into blast in the immediate future.

New York—An order for 10,000 tons of pig iron for Japan has been placed with an eastern producer, through his Tokio offices. Order comprised 5000 tons of basic and 5000 tons of foundry iron. Meanwhile, inquiry is still pending for Scandinavian countries, possibly 1500 tons or so altogether and involving several small lists.

Domestic activity shows some slight gain in specifications. However, there is not as much activity as a month ago.

Buffalo — Shipments in July ranged from 40 to 45 per cent above the preceding month. Volume is still below normal, but hopes are expressed the improvement will be extended in the current month. Foundries indicate melting operations are being increased gradually.

July expansion was due to pickup in miscellaneous orders. While orders from automobile manufacturers are limited some activity is noted in stamping and forging concerns filling needs for automotive accessories. Shipments have improved but sellers still have large orders on books for third quarter shipment.

St. Louis—Reflecting heavy sales just before advance in price and a fair gain in the melt, July shipments showed an increase of approximately one-fourth over June. New buying is confined to small lots for prompt delivery. The only exception was the purchase of 2500 tons by an east side interest for shipment over the balance of the present quarter.

Foundry business is looking up with plants running from three to four days per week. Sellers generally look for a movement during August well in excess of July.

Birmingham, Ala. — Addition of four furnaces during the past month attests to the increase in demand for pig iron estimated currently at nearly 30 per cent ahead of accepted normal. Most buying, however, is on contract and without shipping instructions and is believed to be considerably ahead of actual consumption. Nine stacks are in blast.

Toronto, Ont. — New business continues slow with sales holding around 1800 tons weekly. Melters are in the market for immediate needs and spot sales are running from 50 to 300 tons. No forward delivery buying or large tonnage orders were reported for the week, while the holiday on Monday was responsible for minor decline in this week's sales. Local blast furnace representatives look for speeding up in demand towards the latter part of this month. Production also has dropped with two furnaces blown out, leaving four stacks now blowing with output of 46 per cent of all Canadian capacity. Prices are holding firm and unchanged.

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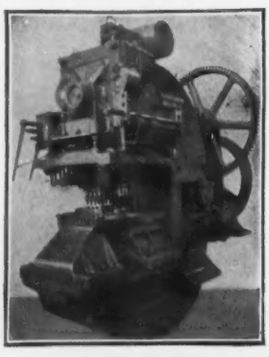

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PITTSBURGH, PA.

Scrap

Scrap Prices, Page 72

Pittsburgh — Scrap presents an apparently contradictory front. Surface strength is undeniable, but there is little demand and only negligible quantities moving. About 2500 tons of No. 1 heavy melting steel was sold last week for $15.50, slightly down from a previous large sale. Apparently the market has leveled out and is temporarily stabilized. Little movement in cast grades has been noted, with foundries still idle generally. A pickup in foundry activity is expected to develop within a few weeks.

Cleveland — Iron and steel scrap markets throughout northern and eastern Ohio have developed considerable strength. Scarcity of good heavy material at the former prices has led to a mark-up to bring out scrap. While local trading has been light and important consumers continue out of the market for tonnages, the strength in the Cleveland and Youngstown markets has plainly increased.

Railroads continue to restrict offerings. Lists now appearing contain only small tonnage lots of various items as has been the case in the past several months. A sale of railroad heavy melting steel to Youngstown mills recently at around $15 is reported.

Chicago — With quotations for No. 1 heavy melting steel now at $14 to $14.50, members of the trade believe the market is fairly well stabilized and see a temporary halt in advancing prices. Scrap is beginning to flow more freely. No spur to mill buying is seen, however, and some quarters believe mill ordering may possibly be held off in hopes that present quotations will weaken. Railroad offerings, which have been heavier recently, are bringing $14 and higher for No. 1 steel.

Boston—Several iron and steel scrap grades for domestic shipment are stronger, including borings and turnings, heavy breakable cast, forge flashings, scrap rails, skeleton and iron car wheels. An active demand prevails for rails for rolling, a New England railroad having turned down $15.50, Boston. Business has been done recently at that figure. Skeleton bundles are up $1. For export the rise has apparently halted, temporarily at least, with $12 to $12.50 being paid, dock, for heavy melting steel. Most cast grades for district delivery are also up. Despite higher prices scrap is coming out slowly and shipments to nearby points and Eastern Pennsylvania are not large, although fairly steady.

New York—While scrap prices continue upward, the advance is confined to fewer grades and is less pronounced. Strength is still reflected on a limited volume of business. Stove plate, based on purchases and shipments to Pennsylvania mills is up 50 cents, while brokers are paying 50 cents more for No. 1 machinery cast and heavy breakable for car loading, f.o.b. New York and Northern New Jersey. Brokers in the New York district still hold divergent views as to scrap values, differing in some instances $1 a ton on several grades with material coming out in slightly better volume. For export, barge delivery, the rise has been halted for the time, although prices are hardening at the higher range of the spread, $11.50 for No. 1 heavy melting steel; $10 for No. 2 with $10 to $10.50 offered for No. 2 cast and up to $9.50 for stove plate. Some brokers refuse to follow the latter quotation, however, on export business.

Philadelphia — Scrap market continues strong and both broker and consumer business warrants advances of about 50 cents a ton on principal grades, including heavy melting steel, cast, and railroad grades. Some steelworks are tending to use cheaper materials. One producer, for instance, is using old bundles as well as No. 1 steel, while another is using turnings along with No. 2. Offerings of new compressed sheets in August in an automotive list brought better than $14.50, delivered mill, in a broker transaction. Some interests still are looking for a softer market which is not in evidence so far.

Buffalo — Although no large sales have been reported recently, strength dominates the trade and prices continue to forge ahead on a nominal basis. The range on No. 1 heavy melting steel is $13 to $13.50. Inquiries are appearing in larger numbers. Consumers, however, are reluctant to pay the higher prices asked by dealers. Bids sharply above levels at which last sales were reported are being turned down by sellers.

Cincinnati — Scrap moved higher in response to dealer transactions and buying, principally in No. 1 steel, for consumer interests. Despite the increases, the undertone has softened because one mill, which took special No. 1 steel at $15.30, now is refusing offerings at $14.50. Dealers are showing more price caution realizing consumer outlets continue restricted.

St. Louis — Scrap continues strong, with new price advances extending to virtually all items. Purchasing by mills remains at a minimum, but brokers are shopping about actively for material to apply on contracts and are bidding higher for heavy melting steel than they sold in the first instance. Malleable and cast scrap is scarce. Railroad offerings before the trade were confined to 7500 tons by the Atchison, Topeka & Santa Fe and 2500 tons by the Wabash railroad.

Birmingham, Ala. — Scrap prices are strong and buying in scattered lots active. Buying probably exceeds actual consumption.

Seattle — Market is firm and

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We're perforating sheets—and plenty of 'em, but are they *Yours?* If they aren't, you have a treat coming. A treat to service—and a treat to quality. All it takes is one little inquiry, and then, Sir—things happen.

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strong in harmony with Eastern centers but in the absence of sales this condition has no significance. Mills are not buying, export movement is off and domestic requirements are small. Tidewater stocks are low and only occasional shipments are coming from the interior. Reports from Japan state stocks will carry through another month but in September it is stated some permits will be issued for limited imports. Dealers expect the Japanese government to control buying rigidly which will probably be steady although in limited tonnages. Meanwhile credits are difficult to obtain and shipments at a minimum.

Toronto, Ont. — Canadian scrap markets are fairly active and local dealers state they have a market for all the active lines they can obtain. Active materials include heavy melting steel, machinery cast and stove plate, while some improvement is reported in sales of turnings and wrought scrap. Offerings have picked up recently but these take in only materials for which there is limited resale demand. Dealers are well stocked and are looking to the United States for a market, which is slow in developing.

Warehouse

Warehouse Prices, Page 71

Cleveland — Warehouse distributors note a continued upward trend in number of orders booked, although despite this improvement total volume shipped remains substantially unchanged. Outlook for August offers considerable encouragement and according to some distributors shipments during the month showed register an increase of approximately 10 per cent over July. Quantity differential plan has been satisfactorily accepted by the trade, but the expected stimulant to new business has failed to materialize.

Chicago—Jobber sales for July showed improvement over June figures, although prices were 7 to 8 per cent lower. Better feeling is resulting in better buying, and market conditions so far this month point to increased tonnage in August.

Philadelphia — Jobbers have reduced a number of products $5 a ton due to competitive conditions and an effort to stimulate demand for tonnage items such as bars, plates, shapes. Current buying has been for specialty products. Demand is generally holding about the same level as July.

Buffalo — Warehouse sales are holding around recent levels. Distributors generally expect improvement being shown in mill bookings to spread to their lines late in August. Consumers are reported to be holding back contemplated requisitions until after vacation periods. While a complete readjustment in prices has just been announced there are still rumblings of further changes, possibly upward, if steel wages are not cut.

Cincinnati — Warehouse sales failed to show much increase over June business because of a decline in the last half. Prices remain firm. Industrial demand, mostly for rush shipment, continues the backbone of the trade.

St. Louis—July sales moderately bettered those of June. Demand is more diverse and individual orders are somewhat larger than the average during the past several months. The general manufacturing trade is accounting for increased tonnages of a variety of items. Quarrying and coal mining interests are buying more freely than heretofore in preparation for increased fall activities. Oil country goods continue active. Tin plate is quiet.

Seattle — July sales exceeded those of June. Improvement is expected during the early fall as federal funds are distributed. No item is in special demand, sales being confined to small lots out of stock. Effective Aug. 1 an additional reduction of 10c on plates, galvanized and hot-rolled sheets was announced, in line with revised mill prices. Other adjustments are expected soon to get local price lists into line.

Tin Plate

Tin Plate Prices, Page 68

Pittsburgh — Tin plate orders are still light with the price situation still the big factor. Announcement of fourth quarter prices, due late this month, is being awaited with interest. In view of the unsettled condition, new buying is nil. Releases on previously placed orders are coming through in a little greater volume, due to the demand by packers whose canning season is beginning. However, the nature of these orders also reflects the uncertainty, as the releases obviously cover only absolute necessities and represent no preparations for future needs.

Production is estimated at between 35 and 40 per cent of capacity, with little change in sight for the balance of the month.

New York—Contract shipments of tin plate have been fairly sustained at the rate of the past several weeks, due to canning season requirements. They are not, however, as heavy as in some recent years, due primarily, it is said, to a substantial stock of fabricated containers at the beginning of the season. New buying is slow and in no case is a consumer specifying more than is absolutely necessary.

Ferroalloys

Ferroalloy Prices, Page 70

New York—Domestic ferromanganese prices are holding unchanged at $92.50, duty paid, Atlantic and Gulf ports, with releases coming

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through a shade better, according to leading sellers. Movement last month was slightly larger than in June, although the increase did not fully reflect the expansion in ingot operations. This is attributed to the fact that many of the large users have substantial stocks on hand.

There may be further small gain this month, but most sellers believe that it will be fall before any appreciable betterment is noted.

Domestic spiegeleisen, 19 to 21 per cent, is holding unchanged at $28 Palmerton, Pa. and 26 to 28 per cent at $33. Relatively, the situation in this material is similar to that in ferromanganese. There has been a small increase in shipments since the beginning of this half, but with the trade anticipating no substantial pick-up until possibly October, or thereabouts.

Sellers of ferrotungsten declare that there is little or no new buying, with a result, incidentally, that prices are nominal. However, sellers are somewhat encouraged by better releases against old contracts —contracts of many months standing in some instances. The releases are small, but a little more numerous, it is pointed out.

Iron Ore

Iron Ore Prices, Page 72

Cleveland — Shipments of iron ore from upper lake ports during July amounted to 3,267,813 tons, compared with 2,837,745 tons in June and 10,704,457 tons in July, 1937. Shipments for this season to Aug. 1 amounted to 7,546,775 tons, against 34,626,751 tons to Aug. 1, 1937, a decrease of 78.2 per cent.

Shipments for the season to Aug. 1 in 1938 and 1937, as tabulated by the Lake Superior Iron Ore association, follow:

Port	To Aug. 1, 1938	To Aug. 1, 1937
Escanaba	341,130	1,678,324
Marquette	368,831	2,649,371
Ashland	774,288	2,880,266
Superior	2,750,662	11,891,899
Duluth	1,627,889	9,880,223
Two Harbors	1,683,975	5,646,668

After setting a record for 1938 by transporting 15,613 tons of iron ore recently (p. 31) Inland Steel Co.'s carrier L. E. Block, last week made an all-time record by carrying 15,726 tons from Marquette, Mich., to Indiana Harbor, Ind.

New York—Due to a somewhat stronger market abroad, Chinese wolframite is nominally higher here at $19 and $20 per net ton unit, duty paid. This strength abroad is attributed to the rather tense situation between Germany and Czechoslovakia and to the possibility Russia may become more involved in hostilities in the Far East.

This tighter situation abroad, however, has not stimulated any activity in ore buying here. Most consumers still have ample stocks on hand for the present, and until steel making operations move up more substantially they will not likely show much interest, it is believed. Small lots of domestic sheelite have been sold recently at around $15, duty paid equivalent.

Steel in Europe

Foreign Steel Prices, Page 71

London—(*By Cable*)—This week the bank holiday has tended to make the market quieter. Little improvement is expected before fall. Heavy steelworks have about three months' work ahead on contracts. Many of the lighter works are operating at about 50 per cent. Stocks of pig iron and semifinished steel still are large. The Continent reports export trade fairly good, considering seasonal influences and the situation in the Far East. A ten shillings, gold, reduction in the price of plates for export, except to British dominions and America, is confirmed.

■ Air conditioning installations in the Chicago district for the first six months of 1938 were less than in the same period last year, according to Commonwealth Edison Co., Chicago. Three hundred and seven central plants were contracted for in the six months of 1937, and 219 in the first half of 1938.

Activities of Steel Users, Makers

■ WILBUR B. Driver Co., Newark, N. J., recently started its new hot rolling mill for nickel-chromium and other alloy steels. The mill rolls a wide range of flats, special shapes, and a variety of sizes in round rods. For the past eight years the company has been melting its own alloys. It now has a completely integrated plant, from high-frequency melting furnace to facilities for making wire as fine as 0.0008-inch for use in precision resistors.

♦

Pure Iron Culvert & Mfg. Co., Portland, Oreg., has changed its name to Oregon Culvert & Pipe Co.

♦

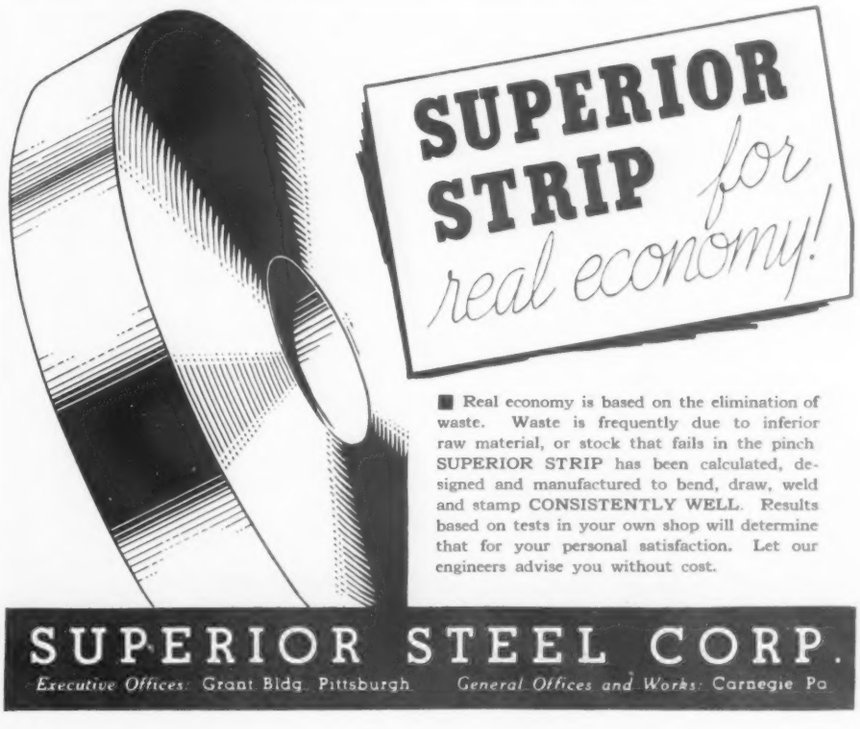
General Alloys Co., Boston, has appointed Charles F. Peace, 229 South Howard street, Baltimore, as its representative in Maryland, and T. Spencer Williamson Jr. Inc., Mutual building, Richmond, Va., as agent in Virginia.

♦

Machined Steel Casting Co., Alliance, O., resumed operations last week on a five-day week basis after being idle all of July. Continuation of present schedule will depend on flow of business, according to W. E. Trump, president.

♦

R. D. Wood Co., Philadelphia, has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appointed Charles C. Grant, 436 Second National building, Akron, O., as its exclusive agent for the Cleveland, Akron and northern Ohio district. Mr. Grant will handle products of the hydraulic machinery division of the Wood company.

♦

John A. Roebling's Sons Co., Trenton, N. J., has established a branch office and warehouse at 855 North avenue, West, Pittsburgh, where a complete line of wire rope and insulated wire will be carried.

♦

Norma-Hoffmann Bearings Corp., Stamford, Conn., has completed an extension to its present buildings and has placed orders for new machine tool equipment, to provide for increasing demand for ball, roller and thrust bearings.

♦

Atlantic Refining Co. has awarded to Worthington Pump & Machinery Corp. the contract for the cargo discharge and circulating pumps for a third 18,500-ton welded tanker to be built for Atlantic company at the Sun Shipyards, Chester, Pa. The three 300 horsepower discharge pumps will be of the centrifugal, deep-well type, driven by 2300-volt explosion-proof motors. Combined capacity will be 630,000 gallons an hour, making it possible for the vessel to unload cargo in approximately 11 hours, about one-third the usual discharge time for a vessel of this size. The main and auxiliary circulating pumps will have a capacity of 522,000 gallons an hour.

Drills Concrete Faster

■ Designed to reduce drilling time 50 per cent in concrete, tile, brick, marble, asphalt and other nonmetallic construction materials, a new concrete drill has been announced by Carboloy Co., Detroit.

This drill can be used in portable electric drills, hand braces or drill presses, and has a wide range of application for installing machinery, fixtures, signs and brackets in industrial plants. It is said to hold a sharp cutting edge for long periods.

Nonferrous Metals

New York — Demand for nonferrous metals in both the domestic and foreign markets tapered last week on the absence of any stimulating developments. Prices here remained steady while those abroad were easier to steady. Sellers generally were reticent since consumption already has shown a slight improvement.

Copper — Export copper maintained a price level about 25 points over the domestic electrolytic quotation, tending to firm sentiment here. Export closed at 10.37½c, c.i.f., while electrolytic held unchanged at 10.12½c, Connecticut. Consensus is that higher levels will be obtained during September.

Lead — Inquiry maintained a fairly active pace early in the week and then tapered after Thursday's trading. Total turnover for the week exceeded expectations since consumers had covered rather fully in the recent buying movement. The rate for prompt delivery was especially surprising. Prices held at 4.75c, East St. Louis.

Zinc — The rise in the galvanized sheet output rate to 48 per cent of capacity, a new high for 1938, buoyed sentiment markedly. With actual consumption increasing, sellers are looking for an improvement in inquiry in the near future. Sellers were reticent at the 4.75-cent level and appeared willing to await higher levels.

Tin—American consumers showed no buying interest until Friday when they suddenly and unexpectedly placed a substantial volume of business. The closing quotation of around 43.65c was well above the low for the week but still below the previous week's average. Tin plate operations continued to hold at around 35 per cent of capacity.

Antimony — Prices held unchanged at 10.75c, New York, for American spot and nominally 14.00c, duty paid New York, for Chinese spot in a dull market.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

	Copper										
	Electro, del.	Lake, del.	Casting,	Straits Tin, New York		Lead	Lead East	Zinc	Aluminum	Antimony Amer.	Nickel Cathodes
July	Conn.	Midwest	refinery	Spot	Futures	N. Y.	St. L.	St. L.	99%	Spot. N.Y.	
30	10.12½	10.25	9.65	44.25	44.45	4.90	4.75	4.75	20.00	10.75	35.00
Aug.											
1	10.12½	10.25	9.65	43.90	44.20	4.90	4.75	4.75	20.00	10.75	35.00
2	10.12½	10.25	9.65	43.65	43.95	4.90	4.75	4.75	20.00	10.75	35.00
3	10.12½	10.25	9.65	43.60	43.90	4.90	4.75	4.75	20.00	10.75	35.00
4	10.12½	10.25	9.65	43.40	43.70	4.90	4.75	4.75	20.00	10.75	35.00
5	10.12½	10.25	9.65	43.65	43.95	4.90	4.75	4.75	20.00	10.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 10.12½c Conn. copper

Sheets

Yellow brass (high)	16.75
Copper, hot rolled	18.25
Lead, cut to jobbers	8.00
Zinc, 100 lb. base	9.75

Tubes

High, yellow brass	19.50
Seamless copper	18.75

Rods

High yellow brass	12.75
Copper, hot rolled	14.75

Anodes

Copper, untrimmed	15.50

Wire

Yellow brass (high)	17.00

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

*New York	6.15-6.40
Cleveland	6.75-7.00
Chicago	6.00-6.25
*St. Louis	5.50-5.75

Heavy Copper and Wire

*New York, No. 1	8.00-8.22½
Cleveland, No. 1	7.50-7.75
Chicago, No. 1	7.50-7.75
St. Louis	7.25-7.50

Composition Brass Borings

New York	5.55-5.90

Light Copper

New York	6.47½-6.67½
Cleveland	6.25-6.50
Chicago	6.00-6.25
*St. Louis	5.50-5.75

Light Brass

Cleveland	3.50-3.75
Chicago	4.00-4.25
St. Louis	3.50-3.75

Lead

New York	4.00-4.25
Cleveland	3.75-4.00
Chicago	3.75-3.87½
St. Louis	3.50-3.75

Zinc

New York	2.50-2.62½
Cleveland	2.25-2.50
*St. Louis	2.25-2.75

Aluminum

Borings, Cleveland	5.75-6.00
Mixed, cast, Cleveland	7.75-8.00
Clips, soft, Cleveland	12.25-12.50
*Mixed, cast, St. Louis	6.75-7.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	10.75
Standard No. 12 aluminum	13.50-14.00

Equipment

Seattle — Seasonal sluggishness prevails but federal spending is expected to stimulate turnover soon. Industrial buying is not active and mining and road requirements have been met. Pumping equipment and electrical items continue in fair demand. Clark county, Wash., has bids for a rock crusher and roller.

Chicago—Machine tool orders are not increasing in proportion to the heavier influx of inquiries, but the latter indicates increasing manufacturing activity, particularly in the East, and has caused brightening of prospects for an early improvement in machine tool sales.

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INSULBRIX are light weight insulating firebrick for direct or indirect exposure to flame and gases in furnaces, ovens and kilns. Highly refractory and efficient—strong—easy to lay.

1-in. has insulating value of 2¾-in. to 5-in. of fire brick. Permit heated equipment to reach operating conditions in short time, meet fluctuations more rapidly—resulting in increased output, conservation of fuel, decreased labor costs, improved furnace room conditions and greater comfort to the workmen.

Send for Bulletin 328 S. T.

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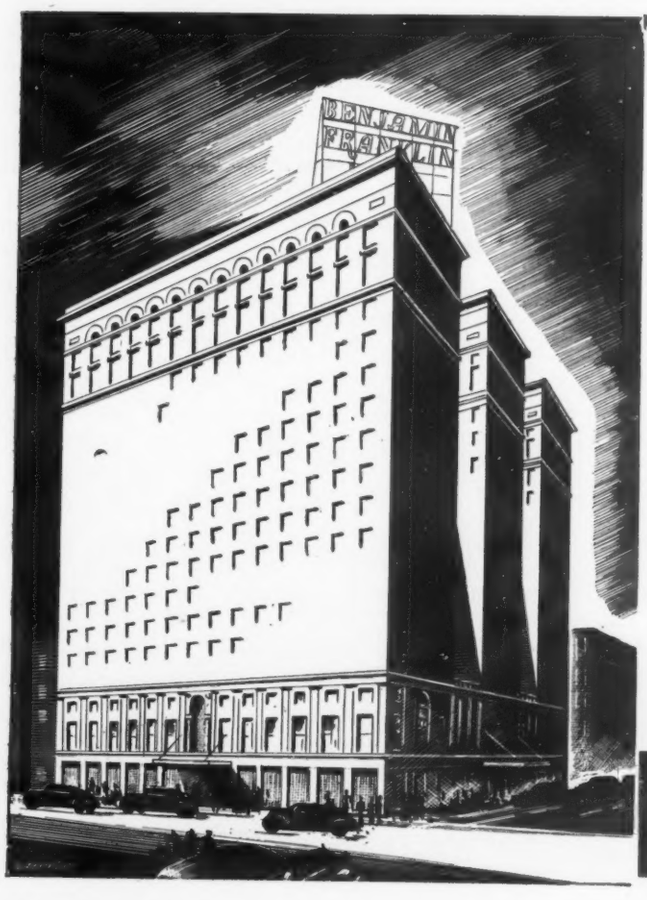

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Samuel Earley, Managing Director

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Standards Association Issues 1938 Yearbook

■ A total of 397 American standards and safety codes have been approved by the American Standards association since its organization in 1918. Of this number, 28 were added in 1937. This is revealed in the association's yearbook for 1938.

In addition to explaining how standards are developed, the report contains an index to approved American standards; an index to projects under development; and rosters of the officers, the standards council and standing committees.

An important administrative achievement was completed by the council during the year—revisions of rules of procedure under which the association has operated since 1928. The new text is more flexible and is so arranged that it can be readily interpreted by those not familiar with association methods.

American industry, through membership of the association in the International Standards association, is co-operating with other industrial countries in development of recommendations for the international unification of standards, including those for steel and iron, refractories, and many other items.

Copies of the 1938 yearbook can be obtained by addressing the American Standards association, 29 West Thirty-ninth street, New York.

Construction and Enterprise

Indiana

EVANSVILLE, IND.—Moutoux Auto & Machine Co., 207 North Wabash avenue, has contracted Tri-State Contracting Co., 1525 Shanklin avenue, for two-story shop. Estimated cost $35,000 with equipment.

HUNTINGTON, IND.—Board of school trustees plans central heating plant for high and grade schools. Bids to be asked soon. Cost about $48,000 with boiler units and auxiliary equipment.

INDIANAPOLIS — Indianapolis Water Co. plans improvements in Fall Creek water station, including new pumps and machinery, and water treatment equipment. Cost about $515,000. It also plans to install elevated steel tank and tower and auxiliary operating equipment in Blue Ridge district, to cost about $250,000. W. C. Mabee, chief engineer.

WASHINGTON, IND.—Work will begin soon on extensions in municipal power plant, cost of which will exceed $75,000. Bevington-Williams Inc., Indianapolis, consulting engineer.

Connecticut

DANBURY, CONN. — Department of justice will build a boiler house at new multi-unit federal prison here. Fund of $1,750,000 has been authorized for project.

HARTFORD, CONN.—State department of public works, State Office building, will build power plant at new state school for mental defectives at Southburg. Estimated cost $5,726,000, of which $2,576,000 will be federal grant.

NORTH CANAAN, CONN.—Regional district high school board, Samuel Eddy, chairman, plans central heating plant in multi-story school, to cost about $350,000.

ROCKYHILL, CONN. — Construction service veterans administration plans power plant at new veterans institution here. Fund of $1,462,000 has been authorized. Bids will be asked soon.

Massachusetts

CAMBRIDGE, MASS.—Lever Bros. Co. plans installing air conditioning system and central heating system in office building at local soap manufacturing plant. Cost over $450,000. Stone & Webster Engineering Corp., 49 Federal street, Boston, engineer.

New York

LONG ISLAND CITY, N. Y.—R. Steel & Sons, maker of forgings, forging hammers and auto parts, 41-42 Vernon boulevard, has plans for one-story machine and forge shop, costing about $35,000 with equipment.

NEW YORK—International Nickel Co., 67 Wall street, will spend approximately $200,000 for erection of foundry at Bayonne, N. J., plant. Epple & Kahrs, 17 Washington street, Newark, N. J., architects and engineers.

WELLSVILLE, N. Y.—Sinclair Oil Co. plans repairing refinery recently destroyed by fire. Cost to exceed $50,000. (Noted July 25.)

Pennsylvania

SAYRE, PA. — Plans new municipal light, heat and power plant costing $550,000. H. S. Child, Sayre, engineer.

Ohio

CLEVELAND—Benger Corp., care of F. E. Bennett, president, 3283 East Eightieth street, plans one-story, 100 x 180-foot corrugated metal, steel foundry. Cost $50,000.

LOGAN, O.—City plans constructing municipal power plant. D. Kinser, mayor.

MIDDLETOWN, O.—City, W. Brown, manager, is considering survey for constructing new municipal electric power plant. Cost $2,500,000.

SABINA, O.—Mechanics Tool & Forge Co. has recently been incorporated with 250 shares of no par value by Lawrence R. Lyons, attorney, Blanchester, O., representing O. N. Tucker and J. E. Pendry of Wilmington, O., and R. W. McPherson of Sabina.

Michigan

DETROIT—Standard Reactor & Spring Co. Inc., has been organized to manufacture metal stampings; Frederick C. Kurth, 6369 West Fort street.

DETROIT—Rotary Electric Steel Co. (Michigan), Eight-Mile and Mound roads, has asked bids on general contract for one-story addition, 140 x 160 feet, to cost over $125,000 with equipment. Shreve, Anderson & Walker, Marquette building, architects.

GRAND RAPIDS, MICH. — Leemon Moulding Machine Co. has been organized with $140,000 capital to make machinery and equipment; Richard Lindland, 500 Michigan Trust building.

Illinois

CHICAGO HEIGHTS, ILL.—American Manganese Steel Co., 389 East Fourteenth street, will soon take bids on general contract for two-story addition, 100 x 115 feet. Cost about $100,000 with equipment.

CHICAGO — Pure Oil Co., 35 East Wacker drive, Chicago, plans pumping plant and installation of steel storage tanks and other equipment in new bulk terminal plant on Mississippi river at LaCrosse, Wis. Cost over $100,000.

ROCKFORD, ILL.—Board of education plans central heating plants in three new schools, for which fund of $3,000,000 is being arranged.

Alabama

DADEVILLE, ALA.—F. N. Farrington and H. L. Minter, Dadeville, plan to construct and operate a cold storage plant, on which work will begin soon. Cost about $35,000 with equipment.

ROBERTSDALE, ALA. — Estimates of cost are being prepared for a municipal electric plant, financing for which is to be arranged through federal aid.

Maryland

CUMBERLAND, MD.—Plans are being drawn for water treatment and purification plant, including pumping station and distribution facilities. Cost about $1,025,000, of which $461,250 has been secured through federal aid.

SPARROWS POINT, MD. — Wilson Welder & Metals Co., subsidiary of Air Reduction Sales Co., 60 East Forty-second street, New York, is taking bids for one-story, 100 x 400-foot plant. Cost $100,000.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until 10 a. m. on the opening dates indicated for furnishing materials and supplies as follows: Until Aug. 12, schedule 4087, one motor-driven universal tool and cutter grinder, delivery, Norfolk, Va.; schedule 4116, heat and flame resistant electric cable, delivery Brooklyn, N. Y., and Mare Island, Calif.; schedule 4103, motor-driven precision milling machines, tools and equipment, delivery Alexandria, Va.; until Aug. 16, schedule 4078, corrosion-resisting, copper-nickel alloy or steel, and perforated sheets; schedule 4106, motor-driven universal crank shaper, delivery Annapolis, Md.; until Aug. 19, schedule 4085, pneumatic drills and hammers; schedule 4090, steel bolts and nuts and lag bolts; schedule 4102, steel gate valves; until Aug. 23, schedule 4104, safety and superheater valves, actuators and spare parts; schedule 4105, motor-driven power press, delivery Mare Island, Calif.; schedule 4107, motor generators, controllers and spare parts, delivery Puget Sound, Wash.

Kentucky

OWENSBORO, KY.—City has engaged Black & Veatch, engineers, 4706 Broadway, Kansas City, Mo., to direct construction of proposed $2,000,000 combined water and light plant. Application has been made to PWA for grant of $1,000,000.

Florida

APALACHICOLA, FLA.—Coast Seafood Corp. plans one-story refrigerator plant to cost about $45,000 with equip-

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ment. H. E. Goodenow is general manager.

HOMESTEAD, FLA.—Plans are being prepared for improvements in municipal electric plant, including 700-kilowatt diesel generator unit and auxiliary equipment. Financing being arranged through federal aid. William Sydow, 3461 Main Highway, Miami, consulting engineer.

MIAMI, FLA. — Water bureau plans diesel-electric generating plant for municipal water pumping station at Hialeah, comprising two 700-kilowatt diesel units and auxiliary equipment. Cost about $200,000. Bids will be asked soon. Carl F. Lambert, Biscayne building, Miami, consulting engineer.

Georgia

TIFTON, GA.—City votes Aug. 31 to ratify issuance of bonds for constructing two sewage disposal plants, extension of water and sewer lines, installation of two pumps, and substitution of either electric or diesel engines at waterworks.

WHITEHALL, GA.—R. N. Fickett, head of Fickett Mfg. Co., Atlanta, Ga., plans new hydraulic electric power plant on Oconee river, near Whitehall, for power service for operation of local cotton mill recently acquired. Will remodel and modernize mill and install motors and controls, regulators, conveyors and other equipment. Cost $250,000. (Noted July 25.)

South Carolina

ROCK HILL, S. C.—City, T. C. Marshall, city manager, receives bids Aug. 12 for constructing 1,000,000-gallon underground water storage reservoir of reinforced concrete design, together with necessary valves, pipes and fittings; installation of 400,000-gallon elevated steel tank, together with necessary appurtenances and 2000-gallon-per-minute water pump and motor.

Oklahoma

TULSA, OKLA.—Shell Petroleum Corp., Mayo building, is completing plans to remodel and enlarge its natural gasoline plant at Healdton; will be converted from a compression process to absorption-type with capacity increased from 2500 gallons to 8000 gallons daily.

Wisconsin

BURLINGTON, WIS. — Special Machines Corp. has been formed by Walter Dinkel, Wallace Newbury and J. F. Hanson, all of Burlington, to make equipment for the paper industry.

KAUKAUNA, WIS.—Plans are maturing for new municipal hydraulic electric power plant with installation of 2400-kilowatt hydraulic turbine and generator unit. Cost estimated at $475,000. Mead, Ward & Hunt, State Journal building, Madison, Wis., consulting engineers. (Noted June 20.)

MEDFORD, WIS.—Taylor county board has voted to apply for PWA funds for construction of highway garage, storage, maintenance and repair shop costing about $35,000. Mark Hirsch is county clerk.

WAUSAU, WIS.—Board of vocational education has applied for PWA grant of $162,000 for building large addition to vocational school. Plans have been prepared by Oppenhamer & Obel, architects, Wausau and Green Bay, Wis.

Minnesota

ALEXANDRIA, MINN.—City, H. S. Campbell, clerk, has filed application with PWA for grant to construct steam generating unit for municipal light, power and heating plant to cost $162,465. Burlingame, Hitchcock & Estabrook, Sexton building, Minneapolis, consulting engineers.

WARROAD, MINN. — Warroad Cooperative Creamery has contracted Johnson-Gillanders Co., 424 North Third street, Grand Forks, N. Dak., for two-story cold storage and refrigerating plant with locker facilities. Cost about $30,000. (Noted May 23.)

WILLMAR, MINN. — Willmar Cold Storage Co. has awarded contract to Nelson Bros. Construction Co., Willmar, for cold storage and refrigerating plant. Cost over $45,000 with equipment.

Texas

GONZALES, TEX.—City, S. M. Ainsworth, mayor, plans power and light plant; has PWA grant of $78,000. Estimated cost $173,000. Garrett Engineering Co., Houston, Tex., engineer.

Kansas

NEWTON, KANS.—City, K. L. Borde, manager, is preparing preliminary plans for improvement of its waterworks plant, including construction of a 3,000,000-gallon steel tank and installing pumps at cost of $60,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

RUSSELL, KANS. — City, George W. Holland, mayor, has received PWA grant of $31,860 for constructing sewage disposal plant costing $70,800. Paulette & Wilson, Farmers Union building, Salina, Kans., consulting engineers.

ST. JOHN, KANS.—City, J. R. Hunter, secretary, has filed application with PWA for grant to construct municipal light plant to cost $75,355. A. W. Hefling, Hutchinson, Kans., consulting engineer.

North Dakota

VALLEY CITY, N. DAK.—City, L. T. Halverson, city auditor, has filed application with PWA for grant to construct improvements in municipal light and power plant at cost of $161,747. Burlingame, Hitchcock & Eastabrook, 521 Sexton building, Minneapolis, consulting engineers.

South Dakota

FREEMAN, S. DAK. — City, Fred J. Stolp, mayor, has filed application with PWA for grant to construct power plant and distribution system to cost $100,000. Buell & Winter Engineering Co., Insurance Exchange building, Sioux City, Iowa, consulting engineer.

VERMILLION, S. DAK.—University of South Dakota, H. N. Nissen, member of board, has filed application with PWA for grant to construct power and heating plant to cost $150,000. D. W. Loucks, state engineer, Pierre, S. Dak., consulting engineer.

Nebraska

LINCOLN, NEBR.—City, Theodore H. Berg, clerk, is preparing plans to ask for bids on constructing power plant improvements costing $175,000. PWA has allotted $78,750. D. L. Erickson is city engineer. (Noted June 6.)

NEWMAN GROVE, NEBR. — Village, A. B. Robinson, mayor, has filed application with PWA for grant in the construction of an electric power plant and distribution system at cost of $109,090. A. S. Harrington, Baum building, Omaha, consulting engineer.

Iowa

ACKLEY, IOWA—City, George Meyer, mayor, has filed application with PWA for grant to construct improvements in electric light plant to cost $20,000. Ralph W. Gearhart, Cedar Rapids, Iowa, consulting engineer.

CEDAR FALLS, IOWA—State board of education, M. R. Pierson, secretary, has filed application with PWA for grant to construct heating and power plant at university at cost of $45,000. E. E. Cole, superintendent of buildings and grounds, is engineer.

CHEROKEE, IOWA — PWA has approved a $65,097 grant to city, J. A. McDonald, mayor, to construct sewage treatment plant, including pumping station. Buell & Winter Engineering Co., Insurance Exchange building, Sioux City, Iowa, is consulting engineer. (Noted June 6.)

Colorado

DENVER — American Crystal Sugar Co., Boston building, contemplates erection of beet sugar mill in northwestern part of Texas. Plans include power house, pumping station, machine shop and other mechanical departments. Cost over $1,000,000 with equipment.

Arizona

PHOENIX, ARIZ.—Board of directors of state institutions is arranging financing through federal aid for new state industrial school for boys, including shops, power house and other mechanical units. Cost about $480,000.

New Mexico

LORDSBURG, N. MEX.—Misers Chest Mining & Milling Co. will erect a new mill and install mining machinery and other mechanical equipment.

Pacific Coast

LOS ANGELES—Board of county supervisors plans central heating plant including two boilers and auxiliary equipment at naval reserve armory on Chaves Ravine boulevard. Cost about $1,000,000.

LOS ANGELES—Pathe Film Corp., 30 Rockefeller plaza, New York, will install motors and controls, power substation equipment, conveyors and other equipment in new film plant and laboratory in Hollywood. Cost $500,000. Work will be placed soon.

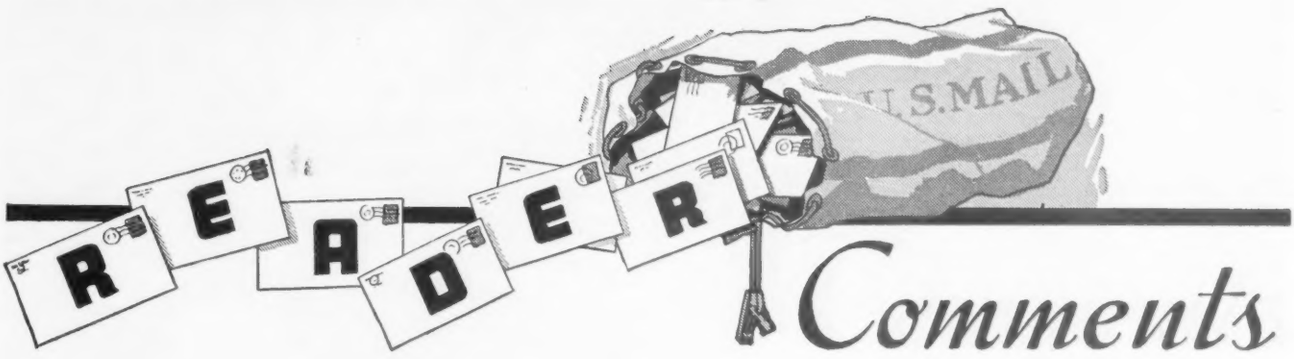
SPOKANE, WASH.—Roy E. Davis is engineer in charge for Winkler-Koch Engineering Co., Wichita, Kans., which has the general contract for erecting a $522;000 refining plant at Hillyard for the Inland Empire Refineries Inc. Plant capacity for treating crude oil from the Montana fields will be 2200 barrels a day.

Canada

PRINCE RUPERT, B. C.—Prince Rupert Lumber, Pulp & Paper Mills Ltd. is preparing plans for erection of pulp plant to cost $1,000.000.

LEASIDE, ONT.—Argo Oil Co. Ltd., 5 Industrial street, plans oil refinery. Cost $500,000.

SIMCOE, ONT.—Canner's Machinery Co. Ltd. plans one-story machine shop, 50 x 100 feet, to cost about $50,000 with machinery.



Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Best Health Talent Sought

To the Editor:

Choice of Dr. Victor G. Heiser as research director for the National Association of Manufacturers' committee on healthful working conditions, (STEEL, Aug. 8, p. 19), is an earnest of the desire of industry to provide the best health surroundings possible for its workers. Dr. Heiser has had probably more experience than anyone else in a broad way in bettering health conditions. In his work as health director for the Philippines, as told in his "Odyssey," he met obstacles of red tape and of the ignorance of the natives in his efforts to better conditions, but triumphed over them all.

The current movement toward the best possible conditions for industrial workers is gaining force and the best talent obtainable is being sought. Results are being obtained far beyond expectations. That it is profitable in dollars as well as in its humanitarian aspects has been proven long since. With the employment of such talent as Dr. Heiser's improvement will be hastened.

WELFARE SUPERVISOR

Milwaukee

Farmers Doing Well

To the Editor:

Despite the tears shed over the plight of the farmer by New Dealers, the farmer by the government's own census showing, is doing pretty well. In the brief outline of the census of 3000 farms in 40 states (STEEL, Aug. 8, page 31) farmers since 1930 are shown to have increased their ownership of tractors, motor trucks and automobiles by substantial percentages; increased by 50 per cent their use of electric lights, and running water in the home; added radios, telephones, bathrooms and other facilities that make country life comparable with that of city dwellers.

Perhaps some of this increased comfort of living has resulted from the subsidies paid for not raising crops and food animals.

But the city dweller and the manufacturer have not been given equal favors by the government and, on the other hand, have been burdened by taxation to aid the farmer, among other recipients of bounty.

Isn't it about time to treat all classes on the same basis and let the farmer make his own way in competition with the artisan and industrial worker?

MACHINIST

Cincinnati

"What They Are"

To the Editor:

This capsule summary of the automobile labor union situation from the *Detroit Free Press* succinctly describes the current status of the schism which threatens to disrupt the UAW organization:

WHAT THE CIO LEADERS ARE CALLING EACH OTHER

(An incomplete box score)

The Homer Martin Faction Calls the Opposition:	The Opposition Calls the Martin Faction:
Communists	Communists
Stalin stooges	Trotsky tools
Moscow agents	Lovestonites
Murderers	Poisonous political perverts
Kidnapers	Racketeers
Burglars	Gangsters
Forgers	Enemies of the Union
Gangsters	Enemies of America
Liars	Liars

THEME SONG: "SOLIDARITY"

Perhaps the only comment that might be appended is that the theme song correctly titled should be: "Solidarity Forever."

Or, to adopt an old phrase: "They are calling one another what they are."

INNOCENT BYSTANDER

Detroit

Room for Small Inventor

To the Editor:

A relatively small item in STEEL, Aug. 1, p. 32, set me thinking that not all the successful inventions come out of the great laboratories where millions are spent for research. There still is room for the independent worker, if he has persistence and the germ of an idea.

The item was to the effect that Rust brothers, inventors of the first successful cotton picker, will build a plant to manufacture these on a commercial scale. The cotton picker long was regarded as a dream that never could be realized. Difficulties were regarded as insuperable because of the way cotton grows and the way it must be handled, to prevent damage to the fiber.

Yet the Rust boys persevered, without a technical organization back of them, and finally succeeded.

This reminds me of the two young men, Beardsley and Piper, who came east from California nearly 20 years ago and brought with them an idea for a machine to pack sand in a foundry flask better than it could be done by hand. They found a sympathetic mind in the management of a Chicago foundry where I worked and for months they experimented. Failures meant nothing to them except an incentive to try again, and finally they succeeded and their machine now is standard for large foundries where sufficient volume of castings is made to keep it busy.

A feature of all these successes won by persistence is that they furnish a further outlet for steel, which probably interests you and your readers more than the fact that a cotton picker and a sand-slinger have been made to work successfully.

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